

A black and white photograph of a snowy forest scene. Two people are walking away from the viewer on a snow-covered path. The trees are heavily laden with snow, and the ground is a smooth, white expanse. The lighting is dramatic, with strong shadows and highlights. The overall mood is serene and quiet.

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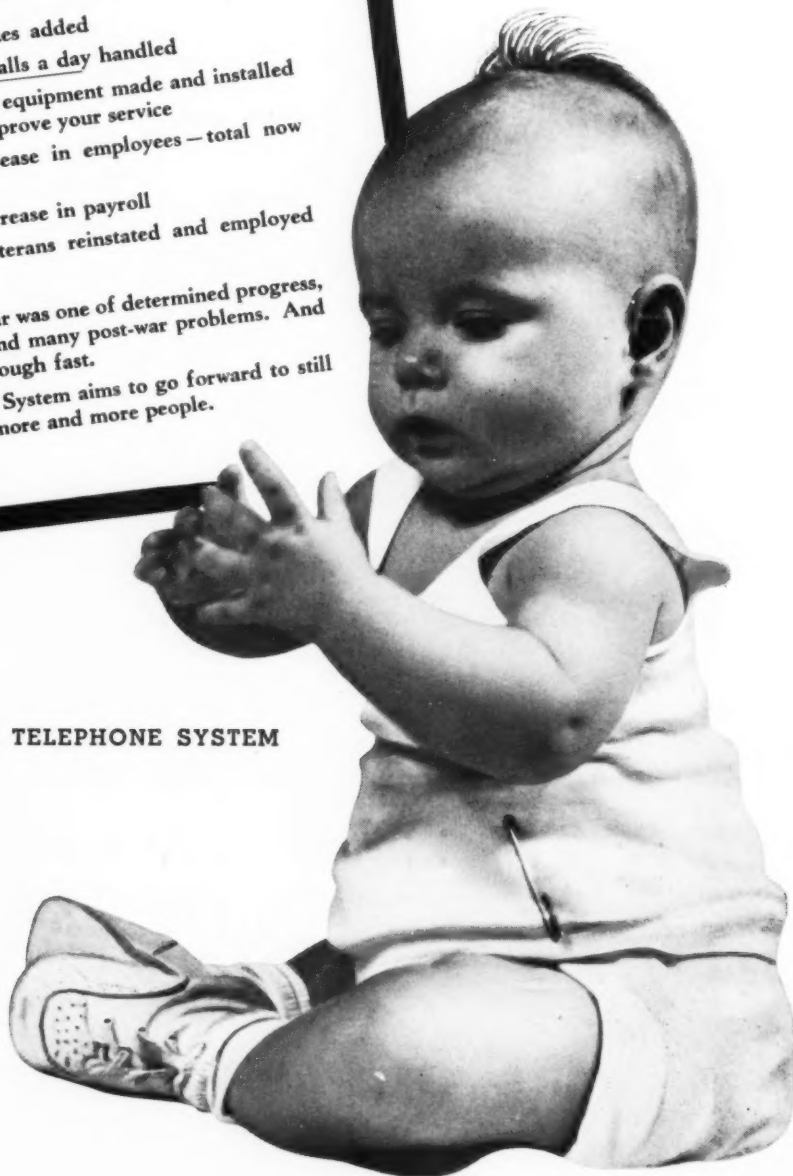
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AMERICAN FORESTS

Published by The American Forestry Association

VOLUME 53

JANUARY, 1947

NUMBER 1

OID BUTLER
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THE COVER

On the Valley View Ski Trail, Routt Nat. Forest, Colorado
Photograph by F. Frank, U. S. Forest Service

The Editors are not responsible for loss or injury of manuscripts and photographs while in their possession or in transit. All manuscripts should be accompanied by return postage. The Editors are not responsible for views expressed in signed articles. Notice of change of address for *American Forests* should be received by the tenth of the month preceding issue. Entered as second-class matter at the Postoffice at Washington, D. C., under the Act of March 3, 1879. Acceptable for mailing at special rate of postage provided in Section 1103, Act of October 3, 1917, authorized July 10, 1918. Additional entry at Baltimore, Maryland, December 29, 1931. Copyright, 1947, by The American Forestry Association.





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The Purpose

The American Forestry Association is a national organization—educational in character—for the advancement of the intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation. Its purpose is (1) to bring about adequate protection and perpetuation of these resources by creating an enlightened public appreciation of the need of conserving them through wise use for the present and future welfare and enjoyment of all the people; (2) to make available to Americans in all walks of life a wider knowledge and appreciation of their forest resources and the part they can play in the social and industrial life of our nation.

The History

MORE THAN half a century ago American men and women of vision, stirred by the rapid destruction of forests and forest life in the United States, began to raise their voices in behalf of conservation. Foreseeing the danger of allowing America's rich forests and vast natural wealth to be thoughtlessly wasted, these public-spirited individuals protested the needless destruction that was taking place. Out of their efforts came a collective force — The American Forestry Association, first organized in 1875 and made a national influence in 1882.

The Record

THUS The American Forestry Association has a long record of efficient public service. The establishment of the United States Forest Service and the creation of the nation-wide system of state and national forests and parks were due in no small part to the Association's efforts. Its educational work, extending over more than seventy years, has stimulated public action and built public support for protection against forest fires and floods; for prevention and control of soil erosion; for the development of conservation policies in forest management for continuous production through wise use; for the control of forest insects and diseases and the preservation of fish and wildlife.

The Support

FROM AN ORGANIZATION of a few hundred members three decades ago, the Association has attained a substantial membership of many thousand men and women, living in every state in the Union and in foreign countries throughout the world. The funds of the Association are administered by a Board of Directors composed of individuals of national standing—men and women who give their services free, who have a practical understanding of the nation's present-day conservation needs, and are equipped through experience, ability, enthusiasm and training to advance the Association's program.

The Program

BECAUSE OF its independent, non-political character, the work of The American Forestry Association is vitally necessary in the field of public service. It provides an unprejudiced influence for the development of sound conservation measures. It helps coordinate public, state and federal policies. It cooperates closely with federal, state and private agencies in conservation work. At the same time it initiates, sponsors and carries on needed projects in conservation in addition to its regular broad continuous program of education.

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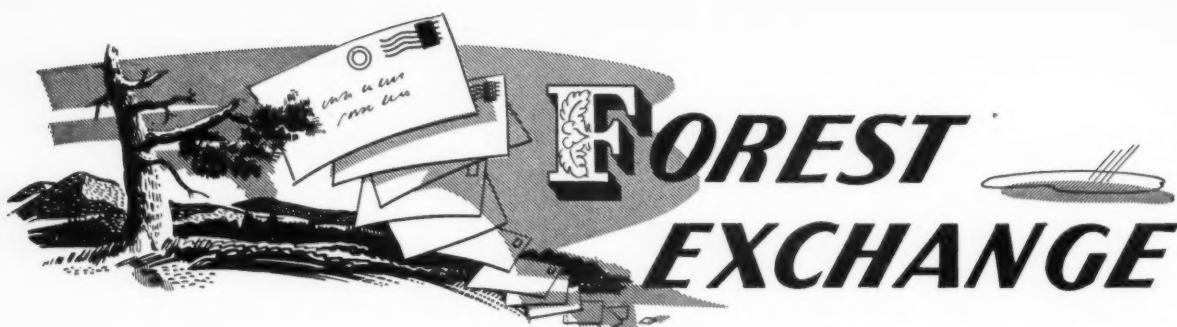


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Agin Us—

SIR: I believe I represent the big group of moderates among foresters. At any rate, I find myself out of step with the crusaders, and I believe in being realistic and fair in public questions.

Recent events have so completely identified the Association with the old school of reactionary thinking that it seems to have exceeded the limits of good taste and good sense as well.

I can understand the irritation of lumbermen who have had to operate under wartime restrictions. It is easy to understand, too, an outcry to get rid of unnecessary restrictions. We all have some pet ones. But when such things are organized and aimed at defeating a national policy of growing timber on the land, and is actively led and sponsored under the name of "The American Forestry Association," I am glad that I neglected to write the check for membership.—*Arthur A. Brown*, U. S. Forest Service, Washington, D. C.

—For Us

SIR: I was greatly impressed by the leadership of The American Forestry Association in calling the American Forest Congress, and herewith offer financial and moral support. I hope the work of the Association will continue at this high level. —*W. E. Wuerdeman*, Washington, D. C.

Should Shelterbelts be Encouraged?

SIR: My shelterbelt was the first planted in Kansas, was a real success and the inspiration for a really big movement. A Shelterbelt Association was organized and we had several very successful meetings.

But the war came along and both our supervisors and machinery for cultivation were put into other service. The first shelterbelts have grown and are so much in evidence that it is hard to make the people who have come in recently imagine our treeless country of the early days. But our

later plantings, unsupervised and not receiving the care provided for the early ones, are a pitiful sight.

It seems to me that it is important that these late plantings be supervised and encouraged—perhaps even more important than supervision of existing forests.

I can still remember when there was not a tree in sight in this section, when we had terrible blizzards, sand storms and grasshoppers. It has taken long years to convert it into the really pleasing section of today. It is not a tree country, and it is only by constant care that it can remain as it is. Without supervision it is not in human nature to progress. I'm sure you will agree with me.

I know our plantings are not forests, but they have certainly made this section into a different place. They should be supervised and encouraged.—*Mrs. Mamie A. Fay*, Pratt, Kansas.

Ripley Was Wrong— Believe It or Not!

SIR: In the September issue, (My Favorite Tree) "Believe It Or Not" Robert Ripley makes an egregious error when, after modestly admitting that he has seen "all the great and famous trees of the world," he refers to the "General Sherman, most majestic of all the California redwoods." As you well know, the General Sherman tree in Sequoia National Park is a *Sequoia gigantea* or Big Tree, and not a redwood *Sequoia sempervirens*.

According to Fry and White in their little book *Big Trees*, the largest redwood is the Maple Creek tree near Crannell, California. As you also know, the redwood grows on the western slope of the California Mountains, not above the fog belt, whereas the Big Tree grows only at higher altitudes, from 7,000 to 8,000 feet, approximately.—*Ernest H. Van Fossan*, Washington, D. C.

"Cooperation" is the Word

SIR: Just read the editorial in the November issue (The Gordian Knot

of a Forest Program). I agree. This whole conservation program must be developed *cooperatively*. Neither the government nor the states should *force* anything except in flagrant cases where the public good is menaced. The public good is now menaced by wrong practices in the woods, by fires and by soil misuse. But the federal government, the states and the private land holders must work out *cooperatively* procedure for the benefit of all the people for the long-est period of time. If this fails in individual cases then *force of law* must be applied.

I see it as a very big *educational* matter. And someone *must* take the lead. Your magazine is doing fine work in that direction. But educational methods must be expanded and diversified. Conservation must be placed in all textbooks from primer to at least through high school. Some states have taken on such programs. The Forest Service made a start along that line at my suggestion some years back, but it has lagged. It is a herculean task. The school and conservation authorities of each state must be gotten together in a conference room and work out a program for that state. Textbooks must be revised. This calls for cooperation of textbook authors and publication departments.

Couldn't The American Forestry Association make this a major project? You have done a good job with the Forest Resource Appraisal, but that is of little value unless the people are advised of the situation. No better way than to get the teachers and the pupils to learn about it. The movie and radio people should be brought into line.

Conservation knowledge must reach *each* person in this country—and before years have elapsed. We must go forward rapidly or we lose. Now is the time.—*H. N. Wheeler*, Washington, D. C.

Youth Speaking

SIR: As a 15-year-old reader who will probably buy your magazine for a long time in the future, I would like to list my opinion.

I am very glad you have returned to the regular type of cover and are keeping up your high standards.

I am glad to pay \$4 a year for such a beautiful and interesting magazine.—Paul Green, Bala-Cynwyd, Pennsylvania.

Tulainyo Lake Is the Highest

SIR: I read Norman Clyde's article "Lake of the Sky" (September issue) with much interest. He accomplished a very good job in his usual pleasing way—but I want to make a correction or two.

Tulainyo Lake is the highest lake on the entire North American continent. The U. S. Geological Survey distinguishes between pools of water or tarns and lakes by this test—0.1 square mile surface area or larger is a lake, anything smaller is a tarn. Tulainyo is more than twice lake size. The two bodies of water in the crater of the Nevado de Toluca in Mexico are higher than Tulainyo, but are well below lake size.

Also, at my humble suggestion the Fish and Game Commission of California planted 10,000 fingerling golden trout in Tulainyo in 1936. I have the authority of the superintendent of the Mt. Whitney Trout Hatchery near Independence, in Owens Valley, from where the planting was made, that one of his assistants, in 1942, caught one or more trout in Tulainyo. Furthermore, he said that the fish had grown to over 12 inches in length.

I might add that, off and on, for two years prior to 1935, I established certain facts about this lake; that I was the first to ever camp on its shores, some 1,700 feet above timberline; that I was the first to ever swim in its deep ultramarine waters. My data appeared in the Los Angeles Times, was carried by the Associated Press to other newspapers.—Chester Versteeg, Los Angeles, California.

We'll Oblige—Soon

SIR: I would like to indorse the suggestion made several times in "The Forest Exchange" that more articles be published in AMERICAN FORESTS dealing with forest planting plans. With the growing interest in tree planting as memorials, it should be helpful to many who "just don't know how to begin."—Rhea R. McCandless, head gardener, Winter General Hospital, Topeka, Kansas.

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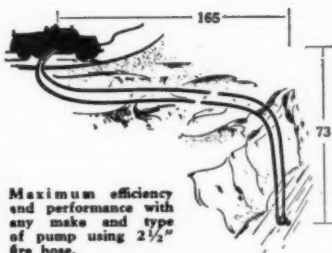
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Editorial

Forestry and the New Congress

WHEN the new Congress, committed under Republican leadership to a program of economy, gets down to charting federal spending during the coming fiscal year, it seems certain that all appropriation items will face a pruning knife whetted to razor-edge. The operators of this knife, if recent elections are any gauge, will have go-ahead approval from a majority of the American people.

How federal forestry will fare in the operating rooms on Capitol Hill where appropriating committees function will depend in considerable measure, we think, upon the understanding on the part of committee members of forest activities essential to safeguarding forest resources and to providing for their long-range management and development. To an additional extent, it will also depend upon the alertness and opposition of the American public to operations that cut into vital blood streams of forest progress merely for the sake of cutting.

At best the prospect is serious. The Republican controlled Congress is committed to a balanced budget, reduction of the national debt and lowering of income taxes—all widely supported objectives. Their accomplishment, however, is in the hands of a Congress composed of many new members, a majority of whom, it is safe to say, may have given little thought to and are not fully informed on the forest resource situation or its present needs. Unfortunately, conservation of natural resources did not figure in the recent elections as a current or vital problem of postwar reconstruction. The policy of the Republican party in respect to dealing with it now and in

long range is unknown to the public and probably to the party itself. Furthermore, it may be assumed that the new budget which the President will submit to Congress has already been severely reduced, thus leaving the Republicans a thinner patient on which to operate.

A realistic appraisal of the situation points to the certainty, we think, that federal forestry is in for a searching scrutiny of its spending practices which in turn means its whole field of activities. It is entirely possible that the new Congress will mark the end of deficit spending by the government and the beginning of a long era, regardless of party in power, during which a balanced budget will be the yardstick of federal activities. There is no evidence that the American public now or in the near future will sanction an exception of forest conservation for special fiscal favors, vital and important though it is, from the many other great questions, human and political, pressing for solution and calling for drains upon the federal treasury.

All this points to the immediate danger that the new Congress in its efforts to apportion appropriations on a greatly reduced level will fail to distinguish between those forest activities of the government which are basic and essential to the conservation of the nation's forest resources and those which can be dispensed with or restricted until the fiscal condition of the government warrants their resumption. If deeply made, blind or so-called horizontal cutting of appropriations irrespective of the importance of the work concerned could wreck or put back by years the progress that has been made over the past four decades in

building the foundations of American forestry.

This applies with special force to the protection of forests from fire as developed under the Clarke-McNary Act during the past 20 years; to the administration and development of the national forests; to maintenance of research in the growing and utilization of forest products; and to extension work among farmers and other small owners where education and woodland management is a pressing essential to continuing progress in private forestry. These are all cornerstone fields of federal forestry which if reduced to ineffective levels in point of operating funds would jeopardize the forest resource and dismember the whole forward movement of American forestry.

We do not mean to say that economies cannot be made in these and other fields. We think they can by elimination of less essential and overlapping activities, by effecting coordination of work between bureaus and by encouraging and developing a larger degree of cooperation on the part of the states and private enterprise, both of which emerged from the war in much better financial condition than did the federal government. In this direction, a great responsibility rests upon federal forest agencies when justifying their requests for funds before congressional committees to clearly differentiate between those activities essential to maintaining the integrity of the forest movement and those activities which in the interest of governmental economy and solvency can be restricted or suspended. In that position, they should and will, we believe, have the fighting support of the American people.

◀ "The Stillness of Winter"—Near Cleveland, Ohio—Photograph by Vernon D. Cady



Sugarwater Forests

By BEVERLEY RHETT

Perhaps nowhere outside of Europe has more money been spent on forestry development than in the Hawaiian Islands. That is, of course, on an area of equal size. Yet in this lush territory little attention is paid to the production of timber. This aspect of forestry is rated a poor fourth among the aims of those who support and control the policies of the islands' forests. These forests are fostered primarily for water, for recreation and for fuel.

This was not always the case. Before the California woods echoed to the ring of the first ax against the heart of a mighty redwood, half a century before the buffalo herds of the plains witnessed the arrival of the first of the endless westward

stream of prairie schooners, the Yankee skipper of another type of ship, then engaged in the China trade, learned of the thousands of clumps of splendid iliahi trees which dotted the islands of the central Pacific. These are true sandalwood trees, the fragrant heartwood of which has for centuries been highly prized among the cultured people of China. At that time—1791—the government of the islands had not yet been unified under the conquering King Kamehameha I; so the enterprising skipper, Captain John Kendrick, bargained with the local rulers to harvest their trees for sale in the Orient. Thus began the first, and probably the only profitable exploitation of Hawaiian timber.

It was a short-lived period, more upsetting to the economic structure and to public morals than damaging to the islands' forests, for the sandalwood is a slow-growing tree, and the ancient stands were soon virtually exhausted. But their space was rapidly filled by other, faster-growing species, so that there was no lasting damage to the woodlands. There is consolation, too, in the knowledge that much of the exquisite wood of Hawaii's iliahi trees was wrought by skilled Chinese craftsmen into art objects which have given delight to generations of beauty-loving people.

Looking back upon the next instance of a large-scale commercial inroad upon the islands' forests, however, one finds no basis for taking

Water, not timber, is the chief product of Hawaii's forests—water in great quantities to supply the Islands' cane sugar industry



similar comfort. In 1868, the boilers of plantation sugar factories were demanding increasing quantities of firewood, and an advertisement in one of the Hawaiian papers of that day read as follows:

"Firewood of the best quality, ohia, koa, or neneleau, at our landing near Hilo Bay in quantities to suit."

Neneleau is the Hawaiian sumach; ohia and koa are hardwoods, the latter a wood of unusual beauty, similar to mahogany. It was truly "firewood of the best quality."

Nor did any faster developing species this time fill the gaps left by the felled trees. Cattle, sheep, and goats had been introduced in Hawaii, and damage from their teeth and hooves contributed heavily to the destruction of mature and well established forests; young growth had no chance against them. Indeed, the havoc wrought by grazing was vastly greater than might ordinarily be expected, for most species of trees indigenous to the islands have no deeply penetrating tap roots, but only shallow root systems that are peculiarly susceptible to injury from pawing hooves and gnawing teeth.

Moreover, in the old reckless days, the sugar industry brought destruction to many more acres of forest land, because in their hunger for cane land the plantations pushed the borders of the woodlands further and further back up the slopes of the mountains. Unheeded went the warn-

ings of the few farsighted men who said that the growers, in their greed, were destroying the watershed upon which the irrigation of their cane crops depended. The heedlessness of the planters is more readily understood when it is realized that at that time there was no organization and little cooperation among them. As in many another instance, it was pretty much every man for himself and the devil take posterity.

Finally, just before the turn of the century, a coffee planting boom and the following crash resulted in the clearing of yet more acres, followed by their abandonment to the ravishment of waste and erosion.

In only one place in the islands was the public sufficiently aroused to protest the destruction. Honolulu, a city of growing importance, had felt the pangs of water famine as early as 1876. The shortage was so serious that it caused the government to attempt to buy back grazing rights on the watershed which at the time was the sole source of the city's water supply. When this end was accomplished two years later, His Majesty, King Kalakaua, with the royal suite, headed an arbor expedition to the Nuuanu Valley, where he planted the first of thousands of eucalyptus trees that made up the beginning of Hawaiian reforestation. It was an ill-fated beginning. Though the leases had been broken, the cattle had not been entirely cleared from the area, and strays made short work of kill-

In its search for trees to serve as protectors of its vital water supply, Hawaii has adopted the shieldleaf pumpwood (left) from tropical America, and the cajeput (right) from Australia



ing the saplings as rapidly as they were planted.

At this time foresters were consulted and almost frantic efforts were put forth to rehabilitate the vanishing value of watersheds which were essential to Honolulu. But the immediate water famine in the city itself and on the great Ewa sugar plantation was alleviated by the drilling of a number of artesian wells. Other plantations followed suit and for a time it appeared that the question of water supply had been answered. Then it was noticed that the level of the artesian basins was falling lower with each passing year.

By this time the sugar plantations, which had been the great destroyers through their demands for land and fuel, had been reorganized by men who were convinced that their future well-being depended upon water supply, which in turn depended upon the well-being of the islands' woodlands.

So in 1913, the Hawaiian Sugar Planters Association inaugurated a scientifically planned, well-financed forestry project, the aim of which was to cover with arboreal water detainers virtually all land not particularly well suited to intensive cultivation, in order that the abundant rainfall might have every possible opportunity of draining through the lava pipes of the soil into the artesian basins below. The ideal was the three story forest—tall, leafy trees; well developed underbrush; and a soft, absorbent forest floor.

To this purpose the native Hawaiian trees were in general not particularly well suited. It was therefore decided to import whatever available species seemed to have promise of giving satisfaction. The forests of

the world were studied in a search for the trees, shrubs and groundlings which might prove best. The scientists retained by the Association began then the experiments which are still being carried on at the arboretum in the upper Manoa Valley—one of the country's finest. Seeds and seedlings of various types were imported, special emphasis being placed upon those species which favored similar climes or which had already taken kindly to new homes in Hawaii, particularly those which would reproduce naturally.

From Australia came the cajeput or paperbark, *Melaleuca leucadendron*. A fireproof tree, its bark is sometimes used for insulating purposes, and its wood is much like birch.

From Central America came the Saman, known in Hawaii as the monkeypod, a tree unusual in that it goes to sleep at night, its leaves folding up and remaining closed until they are touched again by the fingers of the morning sun. The pod of this rapidly growing tree is nutritive for cattle, a quality which makes it particularly acceptable on the big island of Hawaii where cattle ranching still has a place in the economy.

From Norfolk, an island off the coast of New Zealand, came the *Araucaria excelsa*, or "Norfolk pine," which is rapidly reproducing itself on some of the islands of the Hawaiian group.

The South American Christmas tree, *Araucaria augustifolia* is another importation of great beauty which is reproducing satisfactorily, though somewhat more slowly, in the islands. This species, remarkable for the regularity with which its

limbs are spaced—like a series of candelabra arms—now dots the mountains and the steep sides of the numerous deep ravines that honeycomb the vast plateau of Oahu.

Imported Indian sandalwood has been planted in the dry coral soil found in certain parts of the islands and is flourishing, growing to a diameter of as much as ten inches in five years. This wood has the distinction of being, pound for pound, the most valuable wood in the world.

Finally, among the successfully imported trees, perhaps the most promising is the *Albizia moluccana*, a legume, the wood of which is almost as light as balsa. In some localities of Hawaii this species shoots up to a height of 125 feet within as little as 15 years. The wood burns well, almost without residue. But the *Albizia's* greatest value undoubtedly is that it acts as an agent for capturing nitrogen to imprison in the soil. In years to come the tree may prove to be tremendously helpful in restoring the fertility of wornout pineapple or cane lands.

An interesting sidelight played upon the earliest attempts to get natural reproduction from one of the many types of fig trees which were imported to Hawaii. The particular variety in question would not reproduce unless the fertilization was abetted by its own particular species of wasp. So it was necessary to import the wasp—a bit of transportation that posed its own particular scientific problems.

Of the native woods, the kamani is doing particularly well. The pandanus, from which the natives fashion their famous lauhala mats and hand-

(Turn to page 47)

Aerial roots descend from the Australian brassiaia



Eugenia fig, another tree from "Down Under," produces a mass of tangled surface roots to protect soil and conserve water





SKEETER-BEATER

U. S. Army Air Forces Photo

By A. G. HALL

Ordinarily anyone in his right mind would stay away from an area in which, by actual count, more than 1,000 mosquitoes may alight upon a man in the brief span of one minute, where men and livestock may be literally drained of blood by thirsty, disease-carrying insects. But during the last war, there was little choice as to the walls of defense through which fighting men had to force their way. For a while the pest-ridden jungles formed as formidable a barrier as any Maginot or Siegfried line. And the microscopically small sabers of the myriad insects were a better defense for the Jap than was his small caliber rifle.

To reach the human foe, it was necessary first for our armed forces to overcome their insect ally. The War Department, therefore, tested practically every known insecticide.

For a testing grounds, the Army Air Forces found near Orlando, Florida, conditions such as those described above—an area of swampy jungle where pest and disease carrying insects reigned supreme. Here were developed the methods of aerial dispersal of DDT which were used in the establishment of beachheads and at defense zones. And it is here, now, that the Air Proving Ground Command of the Air Corps is turn-

Control of malaria and pest mosquitoes over large areas now possible through Army Air Forces' development of new formulas and techniques in use of DDT—and without harm to plant or bird life

ing its wartime knowledge and experience to the development of effective peacetime control of malaria-spreading mosquitoes.

The use of DDT for treatment of large areas initially had serious limitations. DDT is insoluble in water and cannot even be emulsified in water without the use of liquid solvents and emulsifying agents. In all the conventional solutions and emulsions of DDT now in use, the presence of such solvents as kerosene, Diesel fuel oil, cyclohexanone, orthodichlorobenzene, and so on is a necessity. These solvents constitute a considerable expense, are difficult to transport, often form fire and explosion hazards and may be harmful to human beings and to plants on which they are sprayed.

A water dispersible mixture of DDT and wetting, binding and stick-

ing and stabilizing agents have now been developed. In the type used by the Army Air Forces, DDT constitutes 90.5 percent of the mixture. This may be diluted with water—any water, fresh, brackish, or salt—to the concentration necessary to kill adult mosquitoes. Experiments conducted by the Air Corps have shown that this spray is relatively harmless to plants, as well as to domestic animals, and appears to have longer lasting properties as an insecticide when sprayed on vegetation outdoors.

Recent tests at the Orlando station have shown that dosages of as little as one-tenth pound of water dispersible DDT to an acre of mosquito habitat will give adequate control of adult mosquitoes. This has repeatedly been shown to be harmless to honeybees and other insects important to the pollination of flowers. It has been shown to be absolutely harmless to bird life in the sprayed areas. It is believed to cause the death of a low percentage of the small, shallow-water inhabiting fish, but it has little effect on the larger game and food fishes. It is believed also to be harmful to considerable numbers of snakes, particularly water snakes and cottonmouth moccasins. It has no serious effect on the minute

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NEW DAY in the TALL TIMBER

By CHARLES ELLIOTT

The excitement was like a contagious fire. I could feel it burning along my arms, through my chest and up-ending the hairs at the top of my spine. I could see it shining in Paul's eyes like a gray light, from where he squatted beyond the campfire. I gulped a slug of coffee and glanced at my watch. Daylight was less than an hour away.

Paul was a college dean. He was teamed up with a strange assortment of businessmen, farmers, taxi drivers, and other business and professional representatives. There was an artist in the group and a millionaire manufacturer. Some crouched behind the tiny checking station, out of the wind. Others toasted their hands before the fire, or blistered

their tongues over the black coffee. The beginning of a big adventure on a southern national forest was minutes away.

From the list of applicants, their names had been selected at a public drawing. The lucky hunters had been given maps and instructions and told to report to the checking station on the crest of the Appalachian Moun-

Scene in a typical southeastern "management area"—where trout abound and game is plentiful





Streams are stocked with trout—enough each year to replace those taken by anglers

U. S. Forest Service



Tagging deer before release in a management area. They increase very rapidly

U. S. Forest Service

tains on this November morning.

Most of the hunters, like Paul, had never killed a buck deer. Most of them had never even seen a deer in the woods. Yet they all knew that a few years before the State Game and Fish Commission and the U. S. Forest Service had set aside this 60,000 acre tract in the heart of the southern Appalachians as a "management area" and had inaugurated a stocking program with deer, bear, turkey and trout. They also knew that within a decade, the original deer herd of 100 animals had overrun the refuge and filtered out into the mountain forests on all sides.

The deer stock, some from the Lake States and some from the Carolina Appalachians, had produced a strain of very big bucks.

Each man had paid \$5, in addition to his regular license, for the privilege of trying to kill a buck deer on the management area. Each had been assigned a "compartment," a wide chunk of mountain land which embraced a ridge or a valley, or both, and in which he would be the sole hunter. This minimized the danger of accidental shooting among the two-legged bucks.

A lanky ranger rose from where he had been lounging by the fire.

"It's about that time," he drawled. "Day'll be crackin' by the time you

fellows get on your stands."

There was a mild scramble for guns, the buttoning of coats, the tightening of boot laces. The ranger called a last word of warning.

"Don't go shootin' 'til you know what you're shootin' at. Somebody might mistake yore long ears and let daylight through you."

The army filed down the road toward the compartments, each one of which was designated by a neat white sign at the edge of the road.

Not being eligible as a hunter, I tagged along with Paul as his extra eyes and ears. We found his compartment—Number 7—which Paul claimed was the luckiest in the group. We stepped away from the road and followed a twisting game trail into a wide cove, typical of the southern Appalachians. The forest was open hardwood—huge oaks and ashes and tuliptrees. Throughout the forest and along the slopes of the hills shutting in the cove floor, crooked chestnut stubs stood like grotesque skeletons against the sky. Already the east had begun to glow with cold light and the stars were winking out one by one. The cove floor tilted sharply and we began to climb. I glanced at Paul's face, which was partly hidden by his upright mackinaw collar. It was flushed from excitement and the wind.

We startled a squirrel at his dawn task of digging in the leaves and he streaked for his den tree with a chatter of alarm. Then we stopped to hold a whispered conference.

"We're going into a low gap," I said. "The big bucks are on the ridges now. The gap lies between two high points on a worn game trail."

"If we jump anything," Paul breathed, "I'm ready."

I took the lead and we walked on, as quietly as the blanket of leaves would allow. We topped a low ridge that bulwarked the floor of the cove. A turkey gobbler fed in the acorn flat at the contour of the hill. The surprise was complete for both of us. We stood for a moment, with heads up, then the big bird began to run. A few long strides carried him to the crest of the hill, where he took off at a sharp angle through the trees. I looked back. Paul stood with his rifle to his cheek. He lowered the stock with a grin.

"I almost forgot," he said.

In the gap I looked for fresh tracks. The prints in the soft earth were more than a day old. I found an old log almost hidden by drifted

Uncle Sam and state game commissions join hands to give sportsmen a better day in the woods. Here is how the national forest "management area" plan works



leaves. The leaf mat would make a soft seat for possibly a long wait and its location gave a shooting view of three trails leading into the gap.

In a country so full of deer, this was one sure way of getting a big buck. We might wait five minutes, or two days, but with the woods alive with hunters, most of whom would be scrambling up and down the slopes, a buck eventually would cross the gap.

Paul nervously ran his fingers over the sight of his rifle, then relaxed to quiet watching. I thought about this 60,000-acre management area and the pleasure it was affording 100 southern sportsmen.

This was one of the first of 30 management areas to be established in the Southeast. It was set up to carry out the expanded policy of the Forest Service, which included game management and recreation. I knew many old-line federal foresters recognized a national forest only as land upon which to produce the maximum amount of timber, with little regard for other forest values. But the management areas, which recognized game as an integral part of the forest, were a step in the policy of the greatest good for the greatest number of people.

Fortunately, these areas had not been established as inviolate refuges. That would have been a short-sighted policy. They were created on a basis of allowing the surplus game to be harvested, just as timber crops were harvested when mature.

There had been some dissension between state and federal administrators. For example, there was the famous Pisgah case, in which it was claimed that game within the boundaries of a national forest belonged to the government and did not fall within the jurisdiction of state laws. But these were growing pains. In the South, most of those wrinkles had been ironed out, and the closest cooperation existed between the administrative agencies.

This particular management area was typical. The stocking of game had been the recognized responsibility of Georgia's Game and Fish Commission and the Forest Service. The annual planting of trout in the streams—enough rainbow and brook trout to replace those taken by anglers and natural causes—was done jointly by both agencies.

One ranger had been assigned to devote his full time to the patrol and protection of this management area. He was employed by and responsible to the state, but he worked in close

harmony with the federal service, which gave him additional help when poachers were especially active, or when he needed assistance to sell fishing permits or patrol the streams when fishing was heavy.

Under the agreement between the United States and the state, money from the hunting and fishing permits was divided equally between the co-operators. The state's share of funds was applied to salaries and other expenses of the personnel. The federal share went to construction, improvement and maintenance of dwellings, rearing pools, telephone lines, trails and other facilities within the area.

It was my understanding that efforts were being made to work out similar agreements with all states in which national forests occur. In some areas, plans were being made to increase the elk, in some the big-horn sheep and other big game animals. At Tellico Plains, in Tennessee, European wild boars had been introduced, increased and were now hunted in annual wilderness treks by the more hardy riflemen. In some of the areas where such developments were needed, the Forest Service had devoted a portion of its funds to planting winter feed, to stream improvement for fishing, to the control of predatory birds and animals where they became abundant enough to take too heavy a toll of the game.

I suddenly awoke to the realization that I was numb from the cold and from sitting in one position. I glanced at the sun. It had climbed to the tips of the ridge trees, but its warmth was thin against my cheeks. I put my hands down to change position against the log, but something made me glance at Paul. He was as tense as a Lewellyn, frozen in the sedge. I swung with his eyes into the lights and shadows of the woods. Down the forest aisles came a magnificent buck. He carried his antlers like a crown. He stepped as daintily as a dancing girl, and in my eyes, watering from the cold, he had the stature of an elk.

It was a long shot through the trees, and I remember hoping that Paul would wait. The buck came on, slowly digging at the leaves, lowering his head to feed when he found acorns or sprouts, or other tidbits under the brown leaf blanket.

Suddenly he snorted and threw up his head. For an instant he stood like a graven image in the timber. I realized too late that he had winded us. I said, "Now!"

Out of the corner of my eye I saw
(Turn to page 48)

REPORT ON PROGRAM FOR AMERICAN FORESTRY

The Board of Directors of The American Forestry Association will meet in Washington, D. C., on January 20 to begin final drafting of a national forest policy and program. Study and analysis of the Forest Resource Appraisal data gathered by both the Association and the United States Forest Service, the recommendations of the Higgins Lake Committee, and discussion and proposals which form the full proceedings of the American Forest Congress held in Washington October 9, 10 and 11, will have progressed sufficiently at that time to enable Board members to take up the highly important task of formulating their conclusions as to the type of national program best adapted to meeting the nation's forest needs.

It is impossible to forecast exactly when this program will be completed. As W. S. Rosecrans, president of the Association, stated at the close of the American Forest Congress, it will be announced only after careful analysis, review and consideration by members of the Board of views and information assembled from all sources. Therefore, no time schedule has been established for completion of the work, although efforts will be made to have the program ready to submit to the membership of The American Forestry Association for referendum vote by early spring.

AMERICAN FORESTS will publish the complete program the moment it is formally announced. Meanwhile, readers will be kept abreast of progress and developments—and will continue to receive, month by month, background articles based on the findings of the Forest Resource Appraisal, as well as from other sources. Scheduled for publication this winter and spring are reviews of Appraisal findings in South Carolina, Connecticut, Pennsylvania, and South Dakota. In addition will be such timely and pertinent articles as "Facing the Facts About Farm Forestry," by John Preston; "Permanent Forests at Sheldon," by W. B. Greeley; and "Poles for the Future," by Henry S. Kernan.

THE LEGEND OF NINOMIYA KINJIRO

Every Japanese boy and girl is familiar with the teachings of this legendary figure, who through the years has symbolized diligence and love of the soil and all living things

By M. A. HUBERMAN

IN ALMOST every school yard throughout Japan there is a small stone statue of Ninomiya Kinjiro, a Japanese boy, with a bundle of fuelwood on his back and a book in his hand. According to the various songs and stories which every Japanese boy and girl must learn, Ninomiya was born in the late 1700's, the son of a poor farmer in a village on the River Sakawa, in Kanagawa Prefecture. When he was young, a flood washed away his father's fields, almost ruined the farm, and left the family poverty-stricken. After the waters had subsided, Ninomiya, along with his father, mother, brothers and sisters and neighbors, by back-breaking work, carried soil from the river, built terraces, dug drainage and irrigation ditches, sodded the banks, and slowly restored the farm.

He often trudged to the hills to bring back fuelwood for his mother's cooking or to heat the water for his father's nightly bath; or charcoal for the *hibachi*, or brazier, to warm the family as they sat on the *tatami*, or straw mats, on the floor; or bark from the *sugi*, or cryptomeria trees, to repair the walls or roofs of the farm buildings. From such trips he never failed to bring his mother a few sprigs of azalea, sakura or cherry, or other blossoms for her flower arrangement on the *tokonoma*, or fam-

ily altar-place. Another thing he never forgot on such chores was to take along a book to study while walking up the mountain and while trudging back, laden with his fuelwood and cherished flowers.

He worked hard and studied hard. He watched and admired the trees and plants and all living things. He saw how rain would run down the slopes carrying precious soil with it from bare places, and how this did not happen on slopes where plants grew. He remembered how the flooded river had damaged his father's farm, and he saw how floods might not happen so often or do so much damage if the hillsides always had trees and small plants growing there. As a man he became a leader in teaching careful methods of farming and a proper respect for good use of the land, both mountain and valley. He died in his seventies, but he lives on in the memories of the Japanese people as a symbol of high moral character, diligence, and love of the soil.

In his teachings on farming and flood control are found such forestry ideas as these:

"On planting seedlings it is better to plant many, because they will show rapid growth by striving against each other; and at a certain stage thinning must be carried out in such a way as only trees of best growth will be left. . . . Earlier thinning is better than later thinning . . . What a great favor to this generation has been the supply of timber and fuel planted in the past; so it is our duty to plant now for the welfare of our posterity."

The Japanese school boys and girls must have learned Ninomiya Kinjiro's teachings very well, for all over Japan after the mature timber is cut, the hillsides are planted to trees, and floods are very uncommon. Rare indeed is the Japanese who does not have a real appreciation of conservation and care in the use of the land.



◀ A stone statue of Ninomiya Kinjiro stands in almost every Japanese school yard



Old Bale Mill

WE GOT OUR *State Park*

By ANNE ROLLER ISSLER



YOU think dreamers don't accomplish much? Then pass up this story. Dreamers' enthusiasm is contagious. Should you learn how our small committee went about getting the Robert Louis Stevenson Park for California, you might find yourself starting a move to acquire more historic parks for Iowa, or Georgia, or Ohio, or Vermont. You might go after that memorial or community forest, that playground,

that swimming pool, that youth center your town needs.

There were two of us to start with, two women writers, Harriet Hinsdale of Warner Brothers Pictures, and I of the Napa Valley hinterland. We sat over coffee in a hotel on Hollywood Boulevard one evening three years ago, obsessed with the idea of saving for future generations an old inn, an abandoned silver mine, and a wooded mountain 80 miles north of San Francisco.

Why? Because Mount Saint Helena is a living book. It is the scene of Robert Louis Stevenson's *The Silverado Squatters*. We felt sure that many besides ourselves would enjoy pausing there to recall the love story of R.L.S., remembering how he followed Fanny Osbourne across an ocean and a continent to Monterey, how he married her in San Francisco after months of illness and near-starvation, brought her to Calistoga at the head of Napa Valley, and later found squatters' quarters in Silverado ghost town half-way up this mountain.

We imagined future motorists, en route to the Lake County resorts or the redwoods beyond, crossing the San Francisco Bay Bridge, following the Bayshore Highway to Vallejo and driving north through Napa Valley, "southeastern gateway of the Redwood Empire." We saw them stop at the Bale Mill of 1846, the old stone wineries near the town of Saint Helena, the geysers at Calistoga and the Toll House on the mountain. We hiked with them up the switchback trail to Silverado mine, pointing out the inscription on the Stevenson monument adjacent to the main shaft:

This tablet, placed by the club women of Napa County, marks the site of the cabin occupied in

1880 by Robert Louis Stevenson and bride, while he wrote "The Silverado Squatters."

And finally we followed them to the summit of Mount Saint Helena, almost a mile above sea level, "seeing, to the south, San Francisco Bay, with Tamalpais on the one hand and Monte Diablo on the other; to the west and thirty miles away, the open ocean; eastward, across the cornlands and thick tule swamps of Sacramento Valley, to where the Central Pacific Railroad begins to climb the sides of the Sierras; and northward, for what I know, the white head of Shasta looking down on Oregon."

Harriet and I were not the first to dream of saving this historic mountain from despoilers. The people of Napa County, many of them descendants of the people in *The Sil-*

Re-dedicating the Robert Louis Stevenson tablet on Mount Saint Helena during height of the campaign

Oakland Tribune



When Mr. and Mrs. Citizen make up their minds to solve a problem in conservation, there is action aplenty. Here is a step-by-step guide on how to get results

verado Squatters, had long wanted to preserve it, for the sake of their own past as well as Stevenson's. Mollie Patten, who gave the land on which the women's clubs erected their tablet, wanted to leave her 400 historically priceless acres to the state of California. "I've dreamed of it for years," she told me one wintry night as we sat before the Toll House fire talking of her 50 years as mistress of that inn. But alas, the mortgage that hung above her roof fell with a crash when she died.

I was telling Harriet, on that memorable evening in Hollywood, how I had adopted Mollie Patten's dream as my own; how I had approached the State Park Commission, only to be told they had then no available funds; how I had gone to Sacramento, to find the legislative session almost over! how I had tried to interest the local community.

I worried lest the Toll House burn down for lack of a caretaker, as later it almost did. I worried lest some hot dog vendor convert it into a cheap roadhouse, for property was selling on Mount Saint Helena. I worried lest a lumber company log off the virgin forest. Oh, desperate thought, "Suppose Silverado is forever ruined! If we can't get the money otherwise, we'll have to go out and raise it!"

"Well, let's raise it," Harriet exclaimed.

And that was that.

We knew it wouldn't be easy. We both had homes to look after as well as jobs. We didn't know where we would find

the time for this added responsibility. But it was a relief to have come to a decision. We made our plans, vague in the beginning, more definite as time went on and others joined our cause.

Harriet's initial move after I returned north was to enlist the aid of Perry Worden, 77-year-old columnist on the *Pasadena Star-News*, who took time out of his crowded life to write our first newspaper article.

My own initial move was a letter to John H. Covington, executive secretary of the State Park Commission, telling him of our decision to see the project through. He replied most encouragingly that while the commission still had no funds available, its members were definitely interested "in setting this area aside as an historic monument," half the needed sum to be raised by private subscription as provided for in California law. That meant that when the first half was raised we could ask the state for the remainder.

But how much would we need? The mortgagees said \$14,000 for the whole property—400 acres of forest, the old mine, the Toll House. It seemed reasonable: \$7,000 for us to raise, \$7,000 for the state. They asked a down payment of \$1,000, which we agreed to pay as soon as possible, and the other \$6,000, well—later on. No funds as yet, but would they please hold the place on faith for the present?

Naturally they didn't promise. What we needed was a sponsor, preferably an organization, financially sound and able to inspire confidence in the people who would be asked to contribute.

We found such a sponsor in the Napa Chamber of Commerce. Jack Behrens, then executive secretary, laid our request before his board of directors, who saw the park as an addition to their master plan for the county and promptly endorsed our campaign. Mr. Behrens became treasurer of the fund, furnished a receipt book and a nice thick ledger

California's Napa Valley, "Southeastern gateway to the Redwood Empire," as viewed from the state park, scene of Stevenson's *The Silverado Squatters*

Redwood Empire Association



with clean white pages that didn't remain blank for long, for the *Napa Register*, until then wary of dreamers' schemes, came out with a front page column and a banner headline: "Drive for Robert Louis Stevenson State Park; \$7,000 Must Be Raised."

Our first contribution was a check for \$25 from a dear old lady, Ethel Brodt Wilson, who in younger years had written lovely prose poems, one about Silverado. More checks from local people; we put in ours; and now several arrived from outside the county. We had mailed 212 copies of a news release, sent printed postcards to members of writers' clubs. We had given after-luncheon talks before men's service clubs, federated women's clubs, college groups, literary and historical societies.

At this stage of the campaign a number of Stevensonians offered help, all later members of the Robert Louis Stevenson Memorial Park Committee. Ralph Winston, editor of the *Calistoga*, wrote that he would "if necessary carry on a one-man campaign," and thenceforth he shouldered the load, writing column after column for his paper, getting out hundreds of letters, contacting county and state officials, later appearing before the legislature. Clarkson Dye, San Jose painter, solicited artists' groups, enlisted the aid of the Native Sons and Daughters of the Golden West, and secured their Past Grand President, Wayne Millington, for the committee. Aubrey Drury, executive secretary of the Save-the-Redwoods League, gave valuable help with campaign organization. Idwal Jones, writer for Paramount Pictures, did articles for eastern newspapers. Flodden Heron, San Francisco collector of Stevensoniana, mailed an appeal of his own. Helen Fay, New York lecturer, carried our message over the country in her book talks. Ann Ruggles Johnson, president of the Sonoma County Branch, League of American Pen Women, wrote publicity.

And now something very exciting happened! Jack Behrens received a letter from Norman B. Livermore, "owner of 4,500 acres of land extending from Mount Saint Helena eastward," offering to deed 40 acres adjacent to the park, at

once enlarging our boundaries and reducing the amount of money we had to raise. Mr. Livermore and his sister, Edith, joined our working group, which was formally organized with Ralph Winston as chairman and Jack Behrens as treasurer.

Mr. Winston's efforts brought in additional committee members, among them Dr. Robert G. Sproul, president of the University of California, Joseph Henry Jackson, literary editor, San Francisco *Chronicle*, Leo Carrillo, Hollywood actor, and W. Somerset Maugham, English novelist.

It was Edith Livermore who interested Maugham, got him to pass the hat in England. When she first asked him for a donation, he put her off. She told him that if we didn't raise all the money otherwise she would "sell his rejection as an autograph," whereat he promptly wrote her another salable rejection letter!

Some time after her brother's donation of land to the park, I received a letter from her suggesting that I come to San Francisco. "I am a semi-invalid and can't get about easily," she wrote. "For that reason I have all the more time to do my writing. I write in bed each morning and do about 16 or 20 letters a day. I have nearly reached the end of my list and would be glad of suggestions."

She had written to every college president in the United States, asking "that they pass the hat in their English classes, which they promised to do." She had written to personal friends, to hundreds of strangers. She'd had a message from George Bernard Shaw—to add to the salable rejections. She'd raised at that time between \$700 and \$800, far outshining the rest of us. When we held our big two-day celebration in Napa four months later she was unable to attend but sent in her report, \$2,441, "with more to come!"

That two-day celebration, December 2 and 3, 1944, marked the high spot of the campaign. Most of the committee people were there, along with state, county and city officials, literati, and local citizens.

Ralph Winston reported that an opportunity had arisen to double the park area by purchasing another 400 acres at a very reasonable figure, thus extending our boundaries to the top of Mount Saint Helena. The chairman of the State Park Commission, Joseph R. Knowland, former United States Senator, and father of the current Senator Knowland, approved this addition to the park, especially because it would tie us to our Russian friends, "just as the Stevenson interest ties us to our British friends." He told how in 1841 two Russian explorers from Fort Ross had named the mountain "Saint Helena" and left a copper plate with their names and the date at the summit.

Two Napa women, Mrs. L. E. Stratton and Mrs. Maggie Turner, gave personal reminiscences of their childhood contacts with R.L.S. Mrs. Stratton had played mumblety-peg with him evenings before his hotel cottage at Calistoga, when she brought the milk Fanny Stevenson ordered. Mrs. Turner remembered his visit to her father's ranch in Knight's Valley and the chicken dinner her mother cooked, a dinner she missed because she was too shy to face Stevenson's great brown eyes.

On the morning of December 3, fiftieth anniversary of Stevenson's death, a small group made a pilgrimage to the memorial tablet on Mount Saint Helena. But first we stopped at Calistoga. It was a sunny day, warm enough at noon to shed topcoats. Calistoga, as Stevenson remarked, "reposes on a mere film above a boiling subterranean lake" which keeps the temperature reasonably warm in winter, while ocean breezes keep it reasonably cool in summer. Result, the charming little town, still in general outline as Stevenson described it, is an all-year resort.

Our guests were especially interested in the "spring



Redwood Empire Association

Underground storage tunnel of the old stone winery, a Napa Valley landmark, near the town of St. Helena



Old Photo, Spiers Family, Calistoga

Calistoga, where Stevenson brought his bride, as it appeared in his day. The town, he wrote, "reposes on a mere film above a boiling subterranean lake"

grounds," part of Sam Brannan's 2,000-acre estate, where in 1859 this California pioneer built his great hotel and bathhouse, surrounded by a double circle of cottages, "each with its weedy palm before the door," in one of which the Stevensons lived before they found squatters' quarters at Silverado.

After Calistoga we visited the Toll House and the mine, "entering on the grade" at the very edge of that name, ascending for eight miles through matchless forest with breathtaking views of valley and canyons below. At the exact crest of the grade, where it dips toward Lake County, the cavalcade turned into the old Toll Road and five minutes later stopped on the wide plateau that was the Toll House croquet ground in Stevenson's day.

We explored the long rambling house—not the Toll House Stevenson describes in his famous chapter of that name, but the Silverado Hotel where he called on the Hanson family, this building having been moved downhill from the ghost town flat when the other burned in 1883. We smiled over the rates of toll still quaintly chalked up on the blackboard outside the toll-keeper's lodge. We found the rude toll gate, the clump of trees in whose shade Stevenson quoted French poetry when he and Fanny came house hunting here.

And then we climbed the steep path through the canyon, came out on the woody road where once mule carts hauled Silverado ore, and found ourselves at the base of the "dump" on top of which was the tumbledown building, part assayer's office, part miners' dormitory, which Stevenson called his summer palace.

Another short but very steep climb, and we were peering into the main shaft of Silverado mine and then finding the tunnel that was Stevenson's refrigerator, the spring whence he carried water, the blackened boulder that sheltered the forge where he made a fire on cool evenings, the clump of madrones where he sat looking out over Napa Valley as he wrote in his notebook.

Soon thereafter Ivy Loeber, in the name of the Napa County Federation of Women's Clubs, laid a wreath on the



I. C. Adams

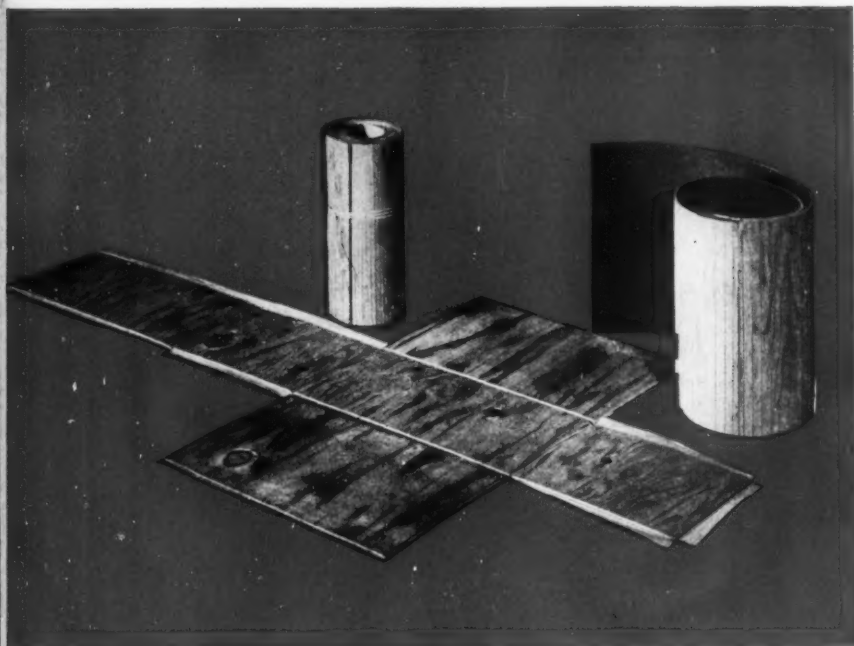
Today Calistoga is an all-year resort, noted for its baths, boiling springs, geysers and climate

Stevenson tablet with a short re-dedication speech. Mr. Knowland told of the Park Commission's plans for preservation of the forest, for improved roads and trails, for picnic tables, for a museum at the Toll House. Flodden Heron promised priceless Stevensoniana for that museum "if a fire proof room can be provided."

Then we wandered down the mountain again by twos and threes, remembering pilgrimages of the past, looking forward to the time when people would come here in numbers—Scouts and Campfire Girls, hiking clubs and history classes, picnic parties and vacationists. As already they have begun!

There isn't much more to tell. We had yet to finish our fund, but the money was pouring in. We had to appear before legislative committees. The actual purchase must still

(Turn to page 43)



WOOD PRODUCTS

Research As A Business

By ARMIN ELMENDORF

Industrial research on wood products, like research work on all other materials of construction, has as its aim the improvement of a product to increase its assets or to reduce its liabilities.

The engineer is responsible for the technical details of manufacture. Management turns to him for advice on uses of a product and for assistance in meeting competition. If gifted with imagination besides possessing specialized knowledge and professional skill, the research engineer can visualize changes in manufacture that occur to no other member of a manufacturing organization. It is his ardor as a pioneer that motivates progress in a company. Without the factual foundation which he alone can furnish, a sales department would be forced to campaign without tools, and an advertising department would search in a fog for ideas to publicize.

When properly integrated in an organization, the research engineer or chemist is no recluse performing mysterious experiments in an isolated building called a laboratory. On the contrary, he is the first person on the scene when there is trouble, and if given adequate authority

he can steer an organization around many embarrassing and costly pitfalls. While mulling over possible causes of difficulties troubling his company or his clients, a good research technician will invariably develop theories as to causes and solutions. Having developed an idea he goes to his laboratory to investigate.

In the laboratory he has at his disposal a variety of instruments or appliances and supplies with which he can conduct experiments to verify his theory. He must select and decide upon the variables to investigate. To conserve time and expense he may study the effect of varying only a few of the factors that have bearing on the problem. It is in the choice of the variables to investigate that the skill of the director of research lies. Good judgment may lead to immediate results; bad judgment may result in a completely sterile investigation.

As the research worker proceeds in his investigation he must continually resort to tests to verify the soundness of the results obtained.

In the case of new wood products he may test for strength, or shrinkage, or hardness, or water-proofness, or any combination of these with other physical properties. Here, too, judgment comes into play, for some physical properties are more important than others and it becomes the responsibility of the director of research to decide upon the requirements that should be met. Experimentation is always followed by testing and testing is usually followed by more experimentation. Sometimes this cycle seems to have no end, and then a serious responsibility falls upon the research worker to decide either to drop the project or to continue it in the knowledge that the chances for success are slight.

No laboratory, of course, can guarantee final and complete answers to any specific problem in any given length of time. Estimates must be made, however, and by looking in perspective at progress made at regular intervals a research director can weigh the prospects for success. The average research project requires from one to five years for completion.

Money spent on research should be considered as an insurance premium

covering the hazard of competition from some startlingly new and superior product that may suddenly come onto the market. Also, it should be looked upon as an investment and not current expense. Even when the results of an investigation are negative, the information gained has real value as a guide directing the explorer in other directions.

Considering the fact that conventional sales and advertising costs usually take from 10 to 50 percent of the sales dollar, the amount of money devoted to producing sales through product and process improvement is generally small. One large manufacturer of building materials, however, appears to have come to the conclusion that research and advertising, when weighed on the balance of results, are about equally important and merit the same appropriations.

On the whole, appropriations for research are generally very modest. Manufacturers of building materials consider an annual appropriation of one percent of the sales dollar as adequate today to keep the company in a strong competitive position. This figure will no doubt rise as management begins to appreciate the results obtained per dollar of expenditure for research and to compare the results with equal expenditures for the more traditional aids to sales, such as advertising. In the chemical industry the research and development departments usually receive from 5 to 10 percent of the sales dollar. On the basis of an annual sales volume of \$10,000,000, progressive building material manufacturers now budget at least \$100,000 for research.

The question of research in the manufacturer's own organization versus the employment of an outside laboratory must be weighed by management. In the beginning it is common for most of the work to be done by outside laboratories. As facilities are added and personnel is found, more work is directed into the company's own laboratory, but not even the largest corporation will depend entirely upon its own laboratory. The broader viewpoint obtained in private laboratories having contacts at many points in the industry, cannot be provided in the company laboratory. Specific and well defined problems can be farmed out to advantage.

Specialization in the problems of one industry is important, but knowledge of manufacturing processes of allied industries and competitive products is also desirable. Thus in the case of wood products research, the laboratory staff should preferably

also be versed in the manufacture of various other building materials, as most wood products compete with other construction materials.

The major characteristics of wood as a raw material can be grouped into two categories. Its assets are esthetic appeal, ease of fabrication, low cost, non-conductor of heat, agreeable to touch, light weight and chemical stability. As to liabilities, wood shrinks and expands, is non-homogeneous, can burn, may decay, varies widely in properties, splits easily, and its conversion is difficult.

The laboratory is usually concerned with controlling or limiting the liabilities of wood so that its assets may be enhanced in competition with other materials.

As an example of what a private laboratory can accomplish in this field, the Elmendorf Corporation, at Chicago, during the past 10 years has conceived, developed, tested and perfected, then manufactured on a semi-commercial scale and tested in use, and in due course manufactured on a full commercial scale, numerous wood products. Some of the following products are now being manufactured, some are in the semi-commercial stage of production and others are still under test in the laboratory:

Wood floor covering—The problem was to produce a tile or wide plank floor covering which could be completely finished in the factory and laid like linoleum. Here shrinkage and expansion had to be brought under control without destroying the

figure, texture, or color of the wood. Flexibility was necessary so that the material could be laid with an adhesive. The resultant product is now being manufactured in the United States on a substantial commercial scale.

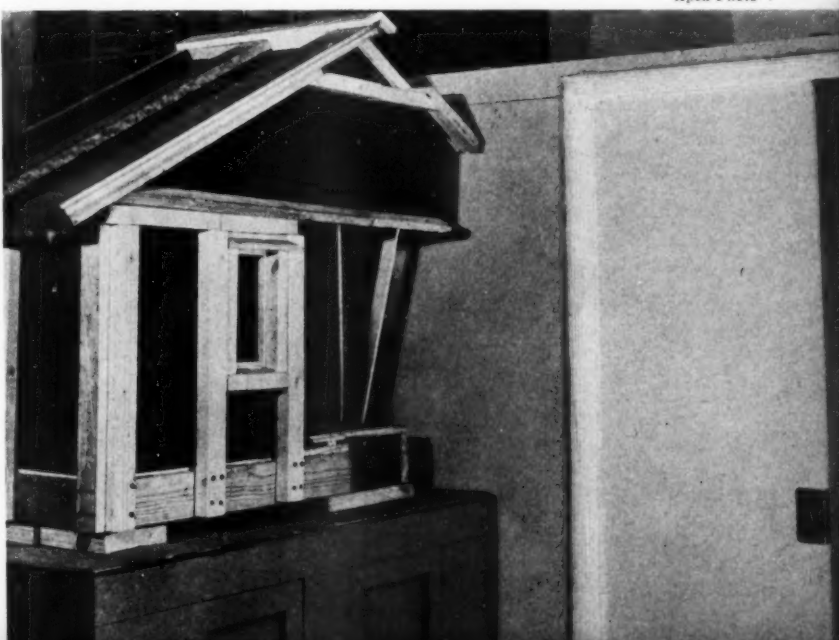
Flexible wood wall covering—Here the problem was to make wood, in the form of thin veneer sheets of cabinet wood, so flexible or pliable that it could be bonded to plaster walls by anyone skilled in the application of wallpaper. Machinery had to be developed, including that for sanding or polishing large veneer sheets only one eighty-fifth of an inch thick. The product is now being manufactured both in the United States and France, and is being used by architects in major cities all over the world.

Metal faced plywood—By bonding thin metal sheets to the faces of plywood, great stiffness and strength are obtained with relatively light weight. This product is now being made in the United States and abroad and has found extensive use in the construction of railway sleeping cars and cabs of Diesel locomotives, as well as for truck bodies and buses.

Plywood for exterior use—While waterproof adhesives are now available and in use by the plywood industry, these have not entirely solved the problem of the manufacture of a completely satisfactory exterior plywood, as they do not prevent face veneer checking. It appears from test specimens that plywood satisfactory

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Laboratory model of prefabricated house, with all joints full scale. At right, sliding door designed to save space in apartment buildings



Apex Photo

SKI TRAILS GO UP...



By NORMAN CLYDE

AS we emerged from our cabin at an elevation of 11,000 feet, a cold morning shadow filled the amphitheater near the headwaters of Big Pine Creek, except for the higher peaks, the tips of which were gilded with the roseate rays of the rising sun. We were deep in the Sierra Nevada of California, to indulge, we hoped, in some pioneer skiing, and the first midwinter ascent of rugged Mt. Winchell, 13,750 feet above sea level.

From the cabin we shot down a steep bluff, across a lake, and continued around a point and through a strip of pines to a stream, which, still unfrozen, we crossed on a somewhat precarious "snow bridge." We then switch-backed some 500 feet up a steep slope to a hanging valley that rose at a gentle inclination for more than a half mile.

From here our proposed route led southwestward. It



At 12,500 skis were abandoned for climbing boots



At 11,000 feet we glided along on powdered snow

was, however, somewhat problematic. Although we were familiar with the topography, the terrain had never been traversed on skis. Its chief problem appeared to be a chute about 500 feet high leading up from the valley. Very steep, too narrow to admit of switchbacking from wall to wall, it might prove an annoying obstacle. Added to this was the fact that the snow might be in very loose powder form, or it might be packed by heavy winds and as hard as marble.

As we swung back and forth up the gradually steepening gradient into the steadily narrowing chute, we observed that it was packed hard. My two friends patiently side-stepped up it with their skies, but I changed to heavy nailed climbing boots.

From the upper end a coulee-like "draw" ran southwestward directly to Mt. Winchell, perhaps a mile distant in

an airline. After continuing for some distance, to our delight the windboard, together with occasional breakable crust, was succeeded by powder snow in perfect condition. Through this, with a gentle swishing sound, our skis glided along, now up gentle gradients, now up step-like inclines sometimes several hundred feet high.

Eventually we swung out of the draw on to the eastern shoulders of Mt. Winchell, at an elevation of over 12,500 feet. Leaving skis and skiing equipment there, and changing to climbing boots, we proceeded up the mountain.

The east shoulder of Mt. Winchell gradually narrows until, about midway to the summit, it becomes a knife-edge. Classed by mountaineers as moderately difficult in summer, it affords an interesting, and to experienced climbers, a



Now upward over snow and rock toward the crest

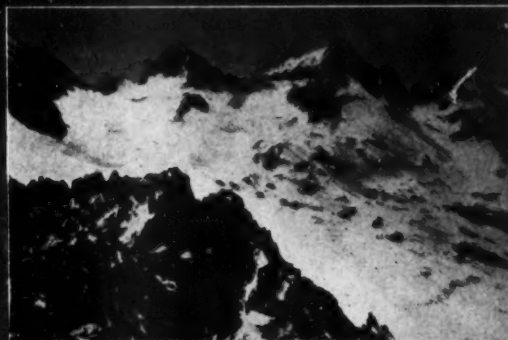
safe ascent. For winter ascent this ridge has the advantage of being swept almost entirely free of snow by violent winds.

Up over a combination of snow and rock we made our way to the crest of the ridge. Along this we moved cautiously, sometimes along ledges, often over steep pitches, as it gradually narrowed to a knife-edge, eventually to a mere blade a few yards in length, dropping on one side down a precipitous incline to a glacier.

After crossing the blade, we walked along a snow-covered ledge around a buttress into the head of a chute. Across this we picked our way to the arête on its farther side, up which we soon made our way to the top of the mountain, a sharp point 13,750 feet above the sea, dropping away in almost sheer walls in every direction except the one from which we had come.

Extending far northward and southward along the crest of the Sierra, eastward far across range after range of desert mountains, the sky was covered with thin layers of cloud. A rather heavy cold wind blew across the summit.

Finding a ledge partly sheltered from the wind, we sat down to eat our lunch and to contemplate the magnificent panorama spread before us in every direction. Immediately to the southeast, across a deep gap in the crest of the range, the North Palisade shot up in precipitous walls to a pinnacle surmounted crest, the highest spire of which attains an altitude of 14,254 feet. To the left of it towered the more massive and almost equally high summit of Mt. Sill. Farther still to the left was the sharp, blade-like crest of the Middle Palisade, with its highest point 14,049 feet in altitude. Over 50 miles in an airline to the southeast the top of Mt. Whitney could be plainly seen. To the north the snowy crest of the Sierra swept to a far away horizon.



On top—for the first winter ascent of Winchell

As we sat perched on the narrow ledge we talked of other climbs, both summer and winter. My companions, David Brower and Morgan Harris, members of the Sierra Club from Berkeley, were both experienced and expert mountaineers and skiers.

The cold wind, however, soon drove us from our airy perch. Down the arête we retraced our way to our skis. Aboard them, we slithered down over a short stretch of windboard to the powder snow in the draw up which we had come. In such fine condition was this that Brower and Harris halted for some time to indulge in fast "schusses" checked or ended by Christies.

Down the draw we continued, looping back and forth over the moderately steep inclinations; shooting obliquely downward across the steeper ones, stemming vigorously as we did so.

All too soon, however, the delightful powder snow was succeeded by smooth crust, sometimes in breakable condition. Several times we were thrown by the crust giving way while we were attempting to execute a turn.

Then came the steep chute with the marble-like snow. Removing our skis, we resorted to climbing boots and, encumbered with skis and poles, with the aid of our ice axes made our way as best we might down the steep incline to the head of the hanging valley.

Down the gentle gradient of this we glided along to the head of the last steep slope. A series of wide loops carried us speedily to the margin of the stream. Using our fragile-appearing snow bridge again, we crossed and continued up through the pines to camp.

So ended a day of pioneer skiing above timberline in the Sierra Nevada, most of the trip being over terrain never before traversed by skis. For the first time in midwinter, also, human foot had trod on the summit of Mt. Winchell, 13,750 feet above the sea.





Virginia Forests

...CROSS SECTION OF THE EAST

By HENRY S. KERNAN

Interest and admiration for Virginia are absorbed by everyone schooled in America. In the historical scene from Jamestown to Appomattox hers was the leading role; and if it has been relatively less since then, Virginia has at least maintained her position as the eastern meeting-place of the North and South. As much is expected of a state whose base runs from the Atlantic Ocean due west beyond Detroit and whose apex lies well above Cape May, New Jersey.

This median quality of Virginia's geographic setting is reflected by her forest cover, which has more distinctive types than any other state. For this reason the achievements and trends of forestry in Virginia are, in a measure, those of every other eastern state.

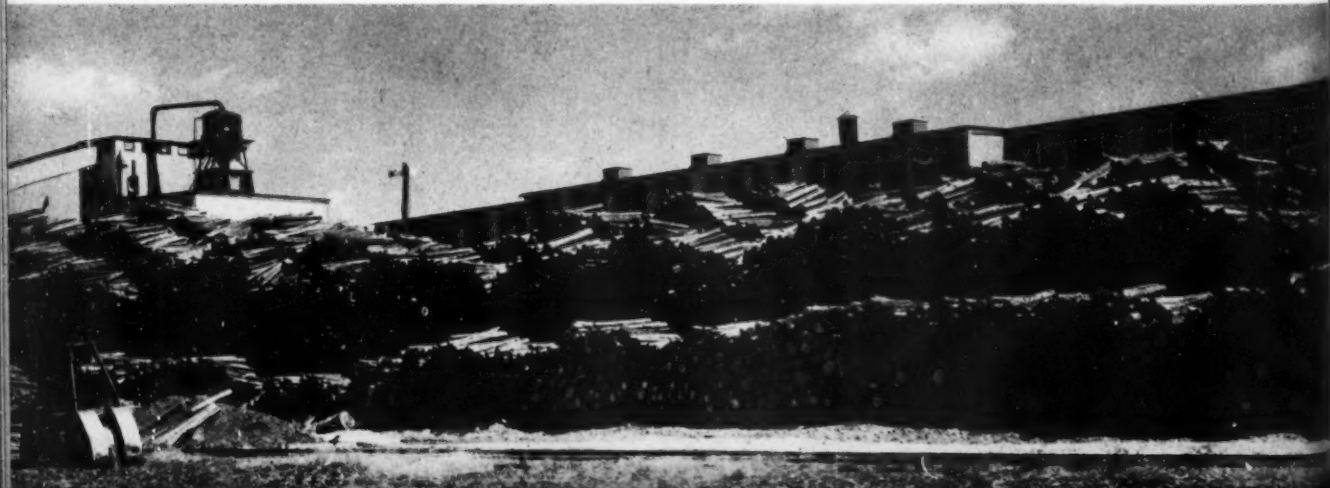
Whether the widespread logging industry that got under way after the Civil War and reached a climax in 1909 with a cut of 4.1 billion board feet is to be regarded as an

achievement or as a disaster depends upon the point of view. Destructive and wasteful it certainly was and in most cases still is; but it was and is carried on in response to a public demand for housing and wood products, and it has at least tacit public approval.

In the long history of Virginia probably more trees have been burned in the process of clearing land than were cut for lumber. But the former is known as pioneering and has had the benefit of a romantic literature. The history of lumbering in Virginia suffers perhaps because it came after agriculture rather than before.

There are three salient facts with regard to the present state of Virginia's forests. The first is their understocked condition. With a volume of 1,690 board feet on an average acre, the total growing stock is 14,832 million board feet. This is probably one-fourth to one-third of what stood originally on the same area. Such depletion is particularly

Establishment of permanent forest industries furnishes a basis for good forestry practices





Contrast in harvesting methods. At left, seed trees dot an otherwise clear-cut area. At right, a selective cutting in loblolly pine followed by a clean up of tops and injured trees for pulpwood

marked in the Blue Ridge Mountains and westward, where the forest has been more damaged by fire and is recovering more slowly than in the pine regions of the Piedmont and Coastal Plain.

On the other hand, the forest makes a small gain each year, amounting to about .35 percent for sawtimber and 1.1 percent for cordwood. Too much significance should not be attached to such figures because they are very small and indicate only that the swift downward trend has been stopped. If considerable additions are to be made to the forest capital within a reasonable time, the rate must be accelerated.

The second point is the widespread occurrence of trees inferior as to species and form. Such composition of the forest is partly due to the practice of high-grading, the earliest and in the long run the most vicious form of American logging. Stands picked over again and again for the best trees deteriorate as the culls are left to take up the growing space and propagate the next generation. Such practice makes sense to each logger because he is interested only in the products that he can readily sell. But a more integrated system of forest exploitation must come about. Farmers have learned to work constantly at improving their breeding stock, and American agriculture has prospered accordingly.

The part played by fire in forest composition is neither widely nor well understood, although it is the subject of much study and discussion by foresters. Uncontrolled fires are always harmful, and therefore control is the first step in every forest program. Fires of any sort are detrimental to hardwoods and must rigidly be excluded from the mountainous sections where such species should continue to predominate.

The problem takes on quite a different aspect in the pine stands of the Piedmont and Coastal Plain. Here the hardwood type was more prevalent formerly than now; and it was replaced by the quick growing pines on abandoned tobacco fields and on areas burned by the local people, following an age-old custom taken over from the Indians. However, since the advent of crop and fire control and high-grading of pine, the trend has reversed. Hardwoods are now increasing at the expense of the pines. The reason is that except on light sandy soils such as are found on

the eastern shore, a mixed stand high-graded for pine or even clear-cut and allowed to regenerate without either cultivation or fire to extirpate the hardwood sprouts, will inevitably lose the pine. This is happening. Virginia is losing her pine; and no trend is more widespread or more radical.

The certain answer to this problem has not yet been found. Fire has a place; but what place is more than the wisest forester can say with certainty. The point may well be raised, why not use the hardwoods? They are being used in ever increasing quantities by the pulp mills. However, such a change in raw materials comes about by necessity and not by choice. Pines grow faster and have more uses. They are altogether more desirable; and if they are lost, everyone is the poorer.

So much need be said for the stocking and composition of Virginia's forest. The former is bad but is improving; the latter is bad and is becoming worse. The third point to be considered is the pattern of forest ownership. This is important because the kind of management a tract of woodland receives is closely related to the purposes for which it is held, which in turn reflects the wood-producing possibilities. There are five important categories of forest ownership in Virginia.

The federal government holds slightly over a million and a half acres. The intensity of its management varies from that of the Shenandoah National Park, from which all cutting is excluded, to that of the experimental forest at Buckingham. Most of the acreage, however, lies within the George Washington and the Jefferson national forests and is thus located in the Appalachian Valley. These forests were among the first to be acquired under the Weeks Act of 1911, and have thus been under management for some decades. Even now their condition is disappointing, indicating the very slow growth and recovery of the Appalachian hardwood type, especially on burned and logged slopes.

A much smaller but rapidly growing class of ownership is that of the paper companies on the southern Coastal Plain. This area with its considerable stand of loblolly pine is near the northern markets and is also favored by good water transportation. The avowed purpose of such holdings is to grow pulpwood on a short rotation; and in-

tensive management is applied within the known limits of silviculture. Here large plant investments are a powerful stimulant to good forestry.

On the other hand, the large lumber companies, which own a quarter of a million acres, twice as much as the paper companies, are making far slower progress in management. Plant investments are smaller and their raw material takes longer to grow.

The coal mining interests in the southwestern part of the state hold some 700 thousand acres, a large part of it wooded. Until recently the custom has been for holding

companies to lease land to operating companies with no restrictions upon the use of the timber. It has been mined along with the coal, and widespread overcutting and devastation are the results. Some progress is now being made toward convincing the owners of their loss and that of the public. They are now strongly in favor of fire control and have begun to pay more than lip service to forestry.

Remaining to be considered are the 11.9 million acres in small tracts belonging to farmers and others—83 percent of the total forest area of 14.8 million acres. How to put forestry on such lands is not only the most important problem in Virginia; it is the most important forestry problem in the country. In the fields of fire control and wood utilization progress has been rapid, even spectacular. But the small forest owner is a capricious human being and his woodlot is affected by intricate natural laws. The combination is a difficult one to influence. At present, less than half the acreage in such ownerships is being properly protected from fire and destructive cutting. Less than one-tenth is managed in conformity with recognized forestry principles of a high order.

It is easy, of course, to decry bad cutting practices, often without knowing what bad cutting practices are. Even if the silvicultural laws of all species and types were known—and they are not—they would be difficult to apply. What might be advisable for a prosperous young farmer might be impossible for his elderly neighbor whose only savings are in his woodlot. Sawmill men, pulpwood men and landowners all agree that present practices do not insure the restocking of land with thrifty young trees of the best species, but they are at a loss for the best remedy.

The possibility of solving the problem of forestry on private ownerships by a cutting practice law has, of course, suggested itself; and for the past few years the Virginia Forest Service has been experimenting with a mild seed-tree law applicable at the option of counties within the pine areas. More recently it has concluded that the problem of forest management is too complex to lend itself to solution by legislation and has refrained from agitation on this point. It has concentrated on fire control; and during the last session of the General Assembly, has been directed to give aid to landowners in handling their woodlots, making nominal charges for such services.

This service is now being rendered in the field by 16 foresters. Their work consists in giving advice to both owners and operators and in marking timber by proved methods so that the interests of each, along with that of the public, will be preserved. Markets are now developed to the point where the management of standing timber is profitable; and good cutting practices will be applied as fast as research determines what they are and extension makes them known.

The employment of these 16 foresters is the biggest step forward in Virginia since the inauguration of fire control. It is the best preventive of experimentation with socialized forestry and compulsion. It is at once a great research program and a great educational campaign designed to help the small owners, the inheritors of Virginian democracy.

It seems desirable to summarize forest types and conditions in the several regions:

Coastal Plain—This is the area of fast-growing, accessible loblolly pine nearest to the markets of the northeastern coast. There is great interest in forest industries, which rank second as a source of industrial employment. There is sharp competition between sawmills and pulpmills for wood. The chief problem is the hardwood invasion of pine lands. Pine is barely holding its own while hardwood is increasing. Utilization of hardwoods by industry and silvi-

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Despite the state's program of fire prevention and control, fire still leaves many unproductive areas



A cutting of inferior trees for fuel has improved this mixed stand on the Cumberland State Forest

HOUSE OF "PALMSTONES"

A resourceful builder solves the materials shortage by utilizing native palms instead of the conventional, hard-to-get clay brick



Wide World Photo

C. L. Baker places a palm section in an interior wall, applying cement mortar with a mason's trowel

THE story of the three little pigs recounts how the wolf huffed and puffed and blew down houses built of lesser substances than bricks. With this story and Florida's frequent hurricanes in mind, C. L. Baker, a carpenter and stone mason of Port Richey, Florida, has started a building project.

Unlike many builders faced with a shortage of conventional building materials, Baker ceased a fruitless search for clay bricks and turned to the materials at hand—palms. For a cost of \$28 a building, not including labor, he is constructing four bungalows for tourist use. His bungalows, with seven-inch palm sections, plus an inch of concrete, are reported to be too tough for termites and virtually fireproof and soundproof.

Utilizing the local palm trees, Baker makes his "bricks" by slicing off short cylindrical sections. These are "laid" in a manner similar to that employed in setting up a stone wall. The "palmstones," as Baker calls them, are held together with a concrete mortar, and the completed job is faced with a concrete finish.

Each bungalow contains two apartments consisting of a living room,

bedroom and a small bath and kitchenette.

The palms are light, strong and durable. Commonly employed for piling, they are resistant to decay, even without their protection of concrete. The tough palm fiber is difficult to saw, however, and it wears out saws at a remarkable rate. Baker says that the palms have already

chewed off three inches of the steel blade of an electrically operated saw. The blade must be resharpened for each new log. But, inventive genius will doubtless solve that problem. Baker is now working on an idea for a cutting press which will turn out the palm sections at a faster rate than sawing and which will be less damaging to equipment.



Wide World Photo

The builder believes a two-apartment unit like this could be set up in a month when the problem of sawing palm trunks is solved

WHAT IS A PINE PLANTATION WORTH?

By EUGENE I. ROE

Here is an interesting appraisal, in dollars and cents, of a 30-year-old red pine plantation at Birch Lake, Minnesota

"THIS is a far cry from the way this area looked 30 years ago."

These were the first words of William Heritage, regional forester of the U. S. Indian Service for the Great Lakes region, one day last fall as we entered the Birch Lake plantations on the Superior National Forest in Min-

nesota. And he knew what he was talking about, for it was Heritage who in 1915 had planted a good share of these red or Norway pines.

At that time he was a ranger on the Superior forest, with headquarters at the old Baird station where, in addition to other duties, he ran a small forest nursery. In the spring he had 40,000 red pine transplants which he decided to plant on the south side of Birch Lake. The area selected, which reputedly had once supported a stand of red and white pine that ran 50,000 board feet to the acre, had burned over repeatedly since logging, the last time in 1914. It was clean of slash and brush. The ranger planted about 60 acres during late April and early May—680 trees to the acre. Planting, mostly by the deep-hole method, cost \$14 an acre.

Weather conditions that followed apparently were very favorable, for more than 80 percent of the trees were still living the second year. This encouraged the planting of an additional 30 acres in the spring of 1917. Heritage, meanwhile, had been transferred, so it fell to other hands to look after "his pines."

Two war years followed, during which there was little time for anything so unimportant as a pine plantation, except to make a survival count of the second plantings. This was as encouraging as the first—better than 85 percent. Thus everyone concerned was satisfied that both plantings were so well established that nothing more needed to be done until the first thinnings—say about 1955.

One important fact was overlooked, however. Experience of previous years had been mostly with plantations on fields not long out of cultivation. But the Birch Lake plantings were on wild land containing many aspen roots. This difference was to prove an important factor affecting the survival and growth of the pines.

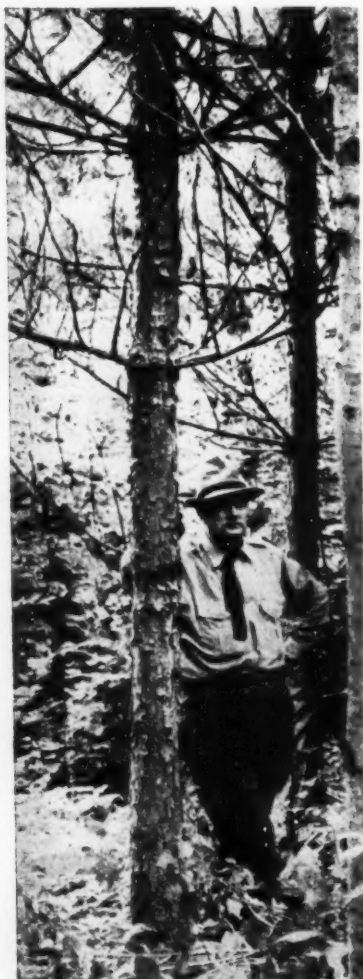
Suckers from the aspen roots soon

came up over most of the area and, in 1924, were beginning to compete with the pines. In 1931, the Lake States Forest Experiment Station made a survey of the area as a check on the survival of the planted trees. The results were disturbing. In about one-sixth of the plantation there was a dense cover of aspen and the pines were gone; in another sixth, the planted trees formed relatively pure stands with only a little aspen. The remainder consisted largely of an aspen overstory with the pines still present, many badly suppressed. As a result of competition with aspen, the survival of the planted pines had dropped to 51 percent. With one-sixth of the plantation already choked out and most of the remainder in serious condition, something had to be done quickly or a large part of Heritage's pines would be lost.

The obvious solution was to cut out all competing aspen where there were still enough planted trees in fair condition to make it worthwhile. Consequently, during the winter of 1931-32 about 50 acres of suppressed pines were released from overhead competition at an average cost of \$2.75 an acre.

The release cutting proved very effective. The pines—freed from the drain on soil moisture and nutrients made by the faster-growing aspens—took on new life. Their crowns became thicker, their trunks sturdier. What had been aspen with an understory of poor, struggling pines, now was a rapidly developing young red pine forest—a forest with a future.

The trees recovered so completely from the suppression and made such rapid growth that six years later the Civilian Conservation Corps pruned the entire plantation, except for some experimental plots, to a height of 12 to 14 feet. The scars have completely healed, and the pruned sections are fast producing clear wood. Plans have been made to extend the pruning of the most promising trees up to a height of 18 feet so that each



Forester William Heritage among the pines he planted

will produce one 16-foot log, clear almost to the center.

Although the trees in the released parts of the plantation now appear thrifty, the years of struggling with the aspen naturally reduced growth as well as the stocking of the pines. In such areas merchantable volume, to a four-inch top, in 1944 was only 17 cords an acre, compared to about 29 cords where the pines had full use of the site without having to share moisture, nutrients and light. These latter areas are the parts of the plantation of which Heritage is particularly proud and which would be typical of the entire area had the harmful effects of the aspen been appreciated earlier.

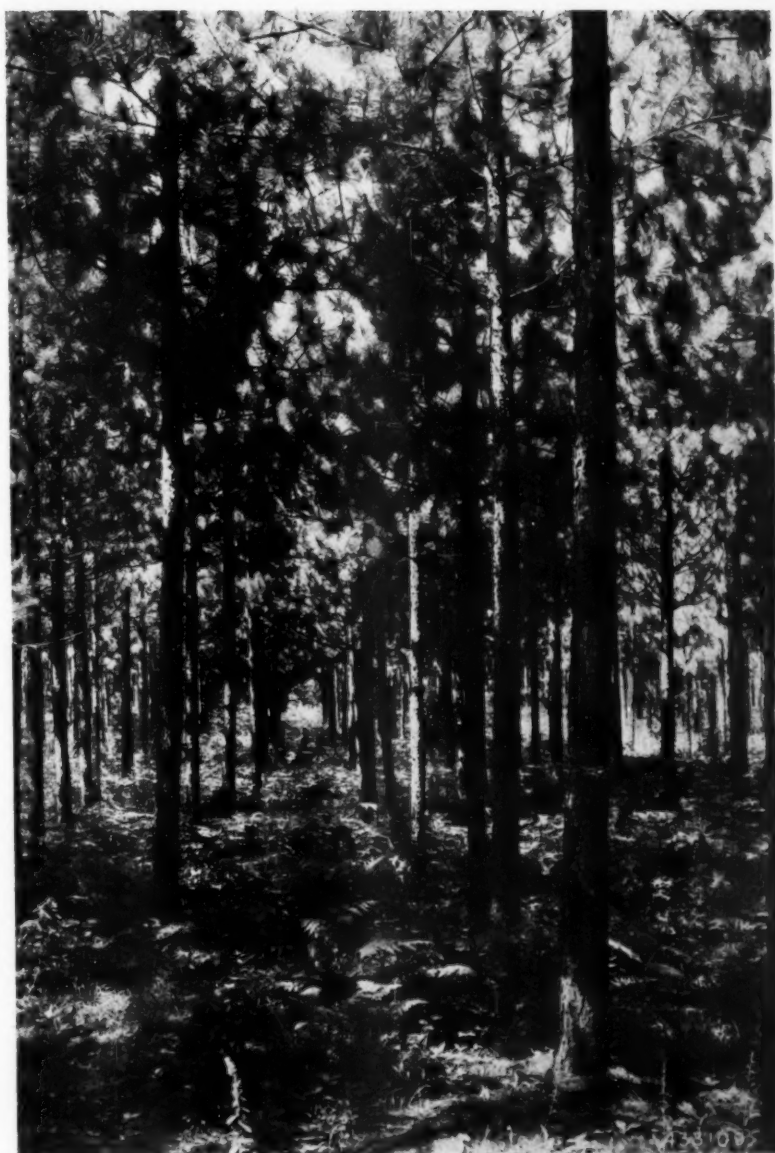
Areas such as these are fast approaching the day when they will need thinning. Indeed, local residents are already pressing for cabin logs. Since the trees are still making rapid growth, however, there is no point in making thinnings yet, even though a merchantable cut could be made. In another three to five years as the crowns become more and more crowded, thinnings for cabin logs, with pulpwood and mine lagging from the tops of the same trees, will doubtless be necessary.

Since many pulp and paper companies are buying tracts of wild land for management, much of which will have to be planted, it might be of interest to look at the pines as they would appear on the books of the mythical "Norway Kraft Paper Company" for whom we shall assume Heritage was forester in 1915.

What would the timber be worth if clear-cut? It shouldn't be, of course, at this age. But for purpose of analysis, what is the book value?

The stand is located less than 10 miles from a railroad and supports 29 cords an acre of standard pulpwood. Since the iron mines at Ely are only 22 miles away, there is also a market for lagging. Utilization can therefore be close. Besides pulpwood, each tree will yield two six-foot sticks of lagging to a two-inch top or seven cords of this product an acre. Using a stumpage rate of \$2 a cord for the pulpwood and \$1 for lagging, will bring a total return of \$65 an acre, an excellent yield for a stand which has had only 30 growing seasons.

Now what about the other side of the picture? The "company," like any other industry producing its own stumpage, naturally has certain charges to meet before it can calculate profit or loss on its woods operations. These include in this case interest on the amount that was spent



Planted in 1917, these pines now average six inches in diameter. They will be ready for commercial thinning in five years

on planting, interest on the land value, and annual charges for taxes, roads and administration. The cost of one release operation will also be included, although the volumes given are from the part of the stand that had no aspen competition. Fire protection is not included since this is a cost borne by the state. To the planting cost of \$14.29 an acre (rather high for a stand spaced eight by eight feet back in 1915) and the cost of release, \$2.75 an acre, will be added annual costs believed typical of those a wood-using industry would have to pay at present. These are as follows:

taxes 20 cents, roads 3 cents, administration 10 cents. In addition, allowance should be made for possible loss from insects, disease, fire and other hazards. An annual charge of five cents an acre will therefore be made to cover these elements of risk, making a total annual charge of 38 cents an acre. Land value will be assumed to be \$2 an acre.

At three percent interest compounded for 30 years, the sum of planting cost, release (compounded for 13 years), interest on land value, and annual charges amount to \$59.65—

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KNOWING YOUR TREES

NORWAY MAPLE

Acer platanoides Linnaeus

By WARREN D. BRUSH

Although not a native tree, Norway maple is well known in the United States because it has been so extensively planted. It has proved to be one of our best ornamental trees because of its pleasing form and its hardiness. The widespreading branches above the short trunk and the rounded, compact head are covered thickly by the bright green leaves. While trees occasionally attain a height of 100 feet, they are usually much less than this, especially when grown in the open.

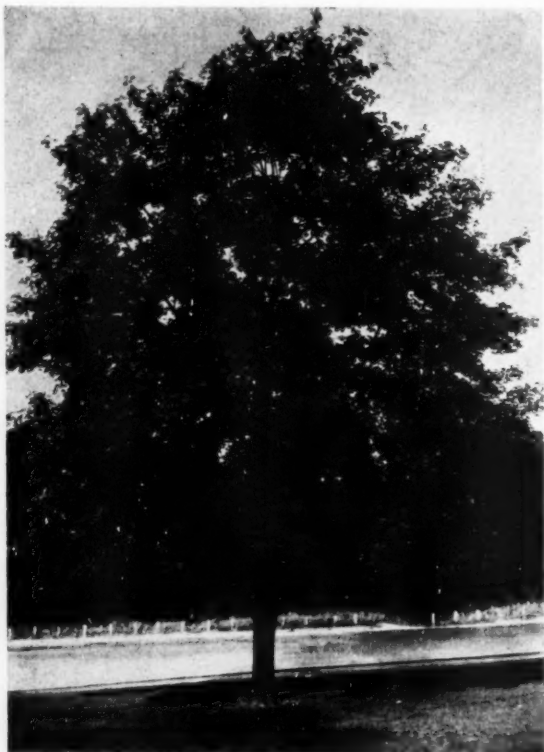
The leaves bear a close resemblance to those of sugar maple but they are somewhat thicker in texture and darker in color. They are five- and sometimes seven-lobed and each lobe usually has one or more pointed teeth. One peculiarity of this species is that the leaf-stem when broken exudes a milky juice. The bark is close and ridged in contrast to the scaly bark of the sugar and sycamore maples.

In April and May the tree is densely covered with clusters of greenish yellow flowers which are fully developed when the leaves are beginning to unfold. In the same clus-

ter may be found separate staminate (male) and pistillate (female) flowers, but some flowers have both stamens and pistils. The fruit is the most distinctive of any of the maples, consisting of winged seed in pairs, the wings and seeds or nutlets set opposite each other and meeting in nearly a straight line. They are fully grown in late spring although the seed does not mature until fall, and throughout the summer the pale green key clusters make a fine appearance among the bright green leaves.

The winter buds are much larger than those of sugar maple. They are oval and reddish brown in color, and, when broken off, a milky juice exudes similar to that from the leaf stems.

As the name implies, the tree is a native of Norway but its natural range extends as far south as Switzerland. Norway maple is very resistant to insect and fungus attack. The tussock moth and the leopard moth frequently injure the leaves and they are sometimes attacked by plant lice and a blight known as maple wilt. The damage to the tree is usually so slight, however, that spraying is seldom necessary.



Md. State Dept. of Forestry

Widespreading branches of the Norway Maple produce a rounded, compact head thickly covered with leaves

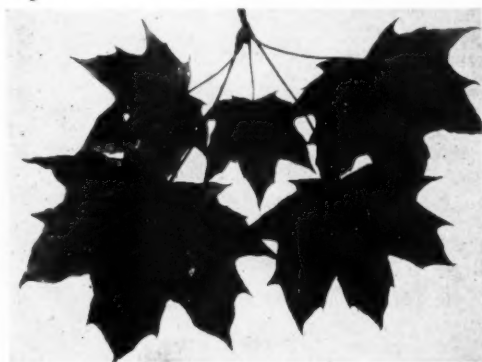


Md. State Dept. of Forestry

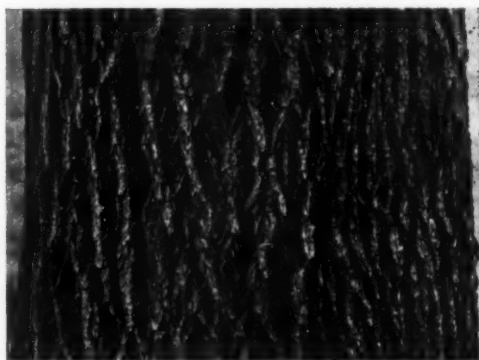
While occasional trees may attain a height of 100 feet, they are usually much smaller when open-grown

Norway maple is fast growing, attaining maturity at the age of 60 years. It makes satisfactory growth on poor soils and is particularly well adapted for cities as it seems to withstand well the smoke, gases and dust. It is much more resistant to disease than the sugar and silver maples and does not grow as large, which makes it more desirable for planting on streets, especially where the

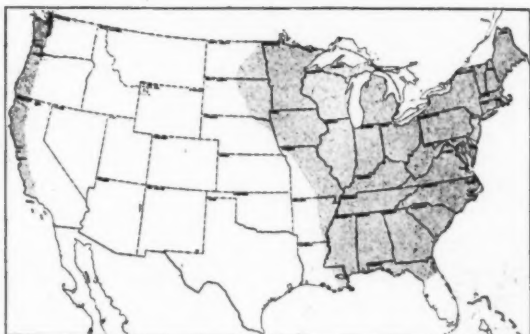
houses are close to the street. Norway maple is easily transplanted. The trees should be pruned from time to time so that the lower branches are a sufficient distance from the ground. As a lawn tree the dense foliage provides heavy shade; moreover the leaves appear earlier in the spring and remain later than those of our native maples. They turn a bright yellow before falling.



L. W. Brownell
Closely resembling those of the sugar maple, the leaves are thicker in texture and darker in color



L. W. Brownell
The bark is close and ridged in contrast to the scaly bark of the sugar and sycamore maples—an aid to winter identification



Not a native tree, the Norway maple is a favorite for ornamental plantings east of the Missouri River and along the West coast



Devereux Butcher
Clusters of greenish yellow flowers are fully developed before the leaves begin to unfold



Devereux Butcher
The fruit is distinctive—winged seeds in pairs, set opposite each other and meeting in almost a straight line



George H. Maxwell

THE world lost a great friend and benefactor when Heaven claimed George Hebard Maxwell at his home in Phoenix, Arizona, a few weeks ago. He died on November 30 at the age of 86.

In the wholesome life of this well-loved humanitarian it is not difficult to find the evidence that the work of the Creator still goes on. For, kindled in this human soul was the divine spark of genius and inspiration, enhanced by unselfish, tireless purpose and self-effacement which enabled him to lead, instruct and elevate his fellowmen to a plane of higher understanding.

To George H. Maxwell we owe much of our present knowledge in matters of preserving, recreating and energizing our wealth of natural resources for the everlasting benefit of mankind.

His disciples are legion. Throughout this and other nations they are at work restoring, harnessing, revitalizing the forces of nature which so lately have been threatened by man's thoughtless destruction.

George Maxwell might well have been a gift to the world by the Maker at a time when divine influence was needed to lead us from a dark future to the light of understanding and bounteous life.

His vast treasure of friends in America and England, saddened as they are by his passing, may find some consolation in the knowledge that George Maxwell, builder of a better world, lived to see his dreams and destiny fulfilled in substantial measure.

George Hebard Maxwell was born

GEORGE HEBARD MAXWELL

Beloved conservationist dies at the age of eighty-six

By BRYCE C. BROWNING

in Sonoma, California, in 1860. His father, John Morgan Maxwell, a gold miner and Forty-Niner, died when George was 14. Left with his mother and two younger children to assist, he worked on his father's ranch. Later he studied law at St. Mathew's Hall at San Mateo, California.

In 1880 he married Katherine Vaughan Panpher of San Francisco. He was 20 years old then, an official stenographer for the U. S. Circuit Court and the Superior Courts of California. He held the world's record of that time with a speed of 325 words a minute.

In 1882 he was admitted to the bar, and established the firm of Messick and Maxwell. He practiced law until 1899. Many of his cases dealt with water and irrigation problems. His training and interest in these subjects led him to give up his lucrative profession and dedicate himself to the problems of water utilization for beneficial purposes. The remainder of his life was given unstintingly to a field of endeavor which offered meager financial returns.

In 1896 he moved to Phoenix, Arizona, then a little desert town with a promise of becoming a bustling center of trade and a health resort.

The town grew, but eventually, because it was in a high arid region, it reached the limit of its water supply. Mr. Maxwell organized a Water Users' Association for the purpose of conserving water supplies at their sources far from town.

His personal work of organization and his campaign of education led to the formation of the National Irrigation Association in 1899. This group secured the passage of the U. S. Reclamation Act in 1902.

With the conservation and wise use of water established in the West it was natural that Mr. Maxwell should turn his attention to the problems of floods which were ravaging the eastern countrysides.

Believing that source control was a better deterrent of floods than high dams, dykes and levees which were the vogue of the day, Mr. Maxwell conceived the plan for the American Homecroft Society. Briefly, the society advocated decentralization of

population in big cities and ownership of small suburban farms. Besides providing a more healthful, independent living for the city man and his family the small suburban plots would make it possible for many men to practice soil and water conservation which was too expensive for one man on a larger farm.

The society, with Mr. Maxwell as executive chairman, spread to England, winning him great acclaim and recognition in England's *Who's Who*. The society was not widely successful because it did not have the support of either organized labor or industry.

In 1909 Mr. Maxwell was made director of the Pittsburgh Flood Commission and was largely responsible for the development of a comprehensive plan for flood control in that area.

In 1930 he was invited to Zanesville, Ohio, where the Chamber of Commerce was actively interested in the development of a flood control program for the Muskingum River area. The Muskingum Watershed Conservancy District, said to be the outstanding conservation project of its kind in the world, now stands as a monument to the inspiration, leadership and continuing efforts of George H. Maxwell.

The idea of the Civilian Conservation Corps was first advocated by Mr. Maxwell before the first World War. The people of San Francisco were so taken with the possibilities of such a program that it seemed certain that it would have been undertaken there had not the war emergency developed at that time.

Mr. Maxwell also was a pioneer advocate of contour ploughing, strip cropping and the development of a system of agriculture which would completely eliminate soil losses.

Few men know of America's debt to George H. Maxwell. These words scarcely record the highlights of his major achievements. But monuments are everywhere visible in physical structures and social movements to remind us of the man who tamed rivers and built a better world.

His record stands as the embodiment of ennobled American manhood, freely giving his service to the people and the land he loved.



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Takes an International Diesel Crawler like this TD-9 to go in there with winch, cable and tongs and bring out your logs without damaging growing stands.

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Tree Trails

REPORT ON AMERICAN BIG TREES

By DOROTHY DIXON

In connection with its campaign to locate and preserve the largest specimens of American trees, The American Forestry Association has issued a revised *Big Tree Report*. Two hundred and forty-nine species of 80 different tree genera are now on record as champions of their kind. Among these is a common pricklyash, *Zanthoxylum americanum*, only seven inches in circumference and reaching a height of only 10 feet—a mere twig in comparison with the mighty sequoia, the famous General Sherman tree growing in Sequoia National Park, California, which measures 101 feet, 6 inches at its base and towers skyward 272 feet. Yet this little tree is the largest of its species yet reported.

The report lists 44 states and the District of Columbia as growers of champion trees, with Maryland leading in number of entries—34. Oregon is represented by 28, with third honors going to California, which has 24 champions. Kendall Laughlin, of Chicago, Illinois, ranks as No. 1

discoverer of Big Trees, having nominated 42 national champions in the project. Second in rank is Fred W. Besley, of Baltimore, former state forester of Maryland, who has 30 entries to his credit, while Oliver V. Matthews, of Salem, Oregon, has discovered 27 champions.

The 1946 report lists a number of new tree species. It will also be noted that several former kings have toppled from their thrones and their crowns given to trees of greater proportions.

Three species of alder—sitka, hazel and thinleaf—bring the total of alder entries to six. The *Ceanothus* is now represented by two species, through the discovery by Mr. Matthews of a fine specimen of snowbrush, or sticky laurel near Oregon City, Oregon. Henry Savage, of Camden, South Carolina, has found a laurel-cherry, which is an additional entry. Two species of cypress—Arizona and Monterey—have also been nominated since publication of the 1945 report. The elder tree group has been increased by a 13-foot (circumference measurement) blackbead, *Sambucus melanocarpa*.

In the fir group, the Fraser has been added, a giant 8 feet in circumference. Four new oaks are listed—bebb, bottom, bushes, and an interior live oak 20-feet in circumference. The pines have two new champions—a large spruce pine 13 feet 6 inches, and a torrey 15 feet 7 inches in circumference.

Championship crowns have been transferred in these tree groups: A Pennsylvania American beech, 16 feet 7 inches in circumference, replaces the Cannon, Delaware beech. A river or red birch, measuring 11 feet 6 inches, and located in the Patuxent Wildlife Research Refuge in Prince Georges County, Maryland, takes the crown from the smaller Easton, Maryland tree. A larger Ozark chinkapin, measuring 9 feet 8 inches, takes the place of the for-

mer Hot Springs National Park champion.

Oregon capitulated to Washington when a Columbia National Forest Noble fir was found to measure 3 feet 11 inches greater than the Palmer, Oregon champion. And the Lassen Volcanic National Park, California, white fir—20 feet 7 inches—bowed to the Plumas National Forest, California *Abies concolor*, measuring 22 feet 1 inch.

Kendall Laughlin, always on the hunt for “bigger” trees replaces his previous two-foot hawthorne entry, *Crataegus sertata*, with one four inches greater in circumference.

Among the larger size specimens to be crowned is a Pacific or western hemlock, 27 feet 2 inches in circumference, in the Olympic National Park. The dethroned hemlock, also a Washington tree, measured but 18 feet 8 inches. Other new champions are among the hickories, hophornbeams, maples, oaks and pines.

Copies of the 1946 *Big Tree Report* are available upon request.



C. N. Myers

Champion swamp white oak near Hanover, Pennsylvania

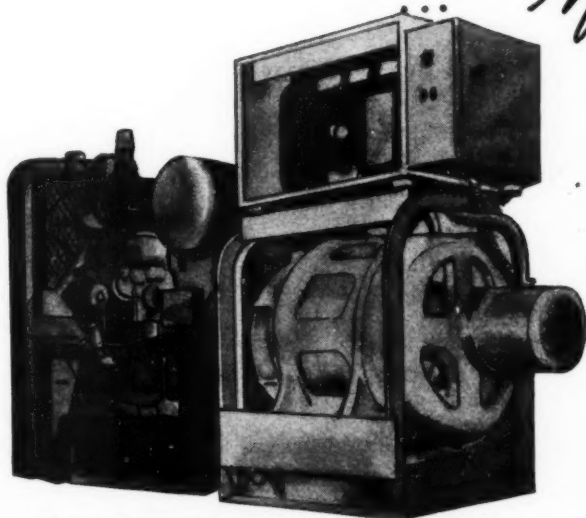


U. S. Forest Service

Largest White fir, Plumas National Forest, California

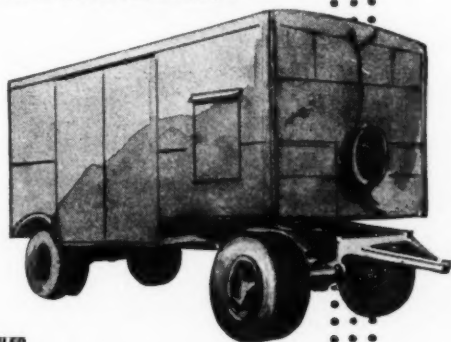
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While some of the power units are used, all are usable without material repairs. All trailers are used.

Although this material has previously been offered to priority claimants, 10% of the merchandise has been reserved to fulfill any further needs of priority claimants including VETERANS OF WORLD WAR II, who are invited to contact the Regional Office serving their area.

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The 5 BROTHERS

ON THE oval at the Ohio State University campus is a group of five English elms, known as the "five brothers." These trees were planted as a class memorial by the members of the senior class of 1891. They are a tradition on the campus and are likely to remain so, since being English elms they were not susceptible to the *phloem necrosis* disease which killed so many magnificent American elms on the campus. Further, they are symbolic of forestry education at the university having been selected by William R. Lazenby, the university's first professor of forestry. Frank W. Rane, who planted one of the five brothers, became professor of horticulture and forestry at New Hampshire A & M College and was state forester of Massachusetts from 1906 to 1919.

The trees are as old as Ohio State's interest in forestry instruction. For ever since 1891 some forestry training has been given at the university. In fact, even before the Department of Horticulture and Forestry was established, Professor William R. Lazenby had instituted forestry courses in the old Department of Botany and Horticulture. Thus Ohio State University was an early leader among American institutions giving formal

forestry work. Instruction in general forestry was required of all horticultural students in a course leading to a Bachelor of Science degree. Professor Lazenby taught all the courses.

In 1909 a separate Department of Forestry was established with two objectives: to educate and train men in forestry, and to promote forestry in Ohio. In addition to Professor Lazenby, Homer Thompson, now chief of the Department of Vegetable Crops at Cornell, was added to the staff. Under the new department, students were able to earn a degree in forestry. Within the next two years the staff was augmented by the addition of C. H. Goetz and Otto W. Pflueger.

By 1915 the department had seven instructors on its staff and had expanded to include graduate work leading to a degree of Master of Science in Forestry. But this year was the turning point in professional instruction at Ohio State. Professor Lazenby died in the summer of 1916 and no one was assigned to replace him. Professor Pflueger left in 1917.

In both 1915 and 1916 a class of eight men was graduated in forestry. There was only one graduate in 1917, and the four-year course was discontinued. From 1918 on the only forestry courses taught at the university were one in principles of forestry and one in farm woodlots taught by Professor Norman W. Scherer. When he left the university in 1930, it was believed that the institution should con-

tinue some forestry instruction since the state had about six million acres of land that should be devoted to wood production. Moreover, it was thought that students in agriculture who were to become county agents and farm managers should have training in handling the forest resource. In cooperation with other forestry institutions a plan was developed for providing the first two years of a regular forestry curriculum at Ohio State, and Professor E. G. Wiese-huegel was engaged to teach it.

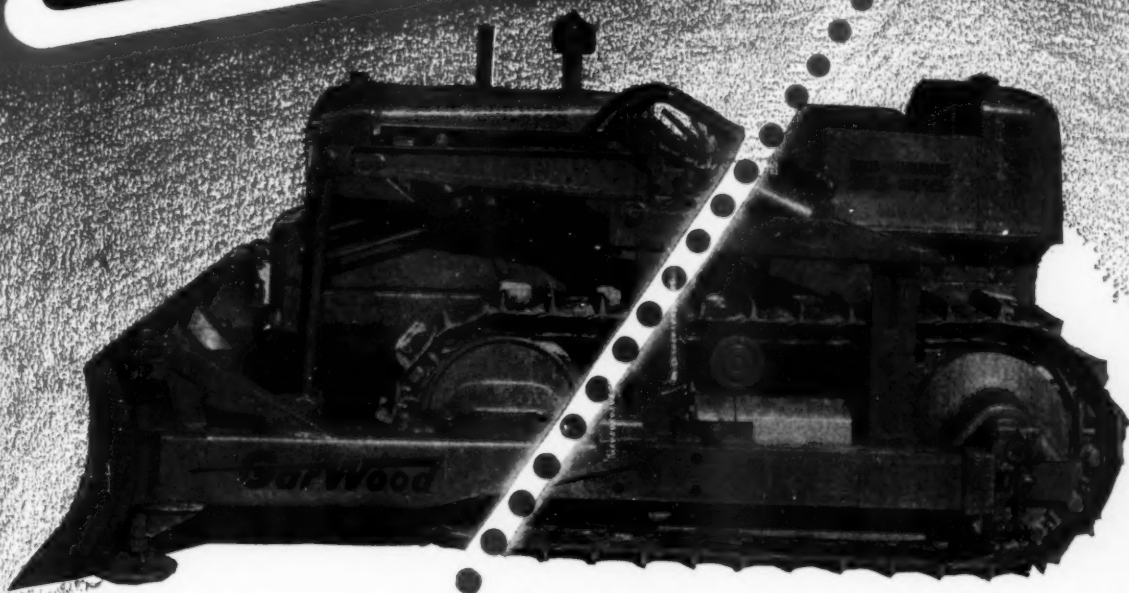
Forty-five freshmen and sophomore students were majoring in forestry by 1935. An attempt was made, by student petition, to expand the course to a full four-year study leading to a degree. This attempt failed. From 1936, when Professor Wiese-huegel left the university, until 1942, the two-year course continued under Professor Frank K. Beyer. When he left in 1942, the course was abandoned.

But like the "five brothers," forestry still has a place in the traditions of the Ohio State campus. Professor Oliver D. Diller, associate forester at the Ohio Agricultural Experiment Station has, since 1942, been employed on a part time basis to teach non-professional courses in forestry. Emphasis is now placed on a general course in forest conservation open to all university students and on farm woodland management for students in the College of Agriculture.

These elms symbolize 55 years of forestry at Ohio State University



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FRESHMEN'S BEST

By THE PROFESSOR

Teaching has its lighter moments. The hours spent exposing classes of aspiring foresters to gems of wisdom are sometimes brightened for the perspiring instructor. An occasional discussion prompted by the zeal of some eager freshman or by the instructor himself is often responsible. Then again, some student in his diligence to get his money's worth and satisfy his mental appetite will inadvertently let fall a remark or a question that will bring down the classroom. Often the instructor, in spite of himself, has been known to do the same thing. But it is when the quizzes and exams are given and the freshman must commit himself in black and white, for better or for worse, that the instructor reaps the fruits of his labors.

Some of the answers to questions, presumably of a perfectly professional and serious nature, are so utterly quaint, so astronomically amusing and, above all, so supremely original, that in some cases the instructor is tempted to give the perpetrator at least partial credit for proving his ability as a wit. There are instances, and they are probably in the ma-

jority, where these priceless answers are unquestionably born of desperation with a dash of ingenuity thrown in for good measure.

For example, what do you suppose ran through one freshman's mind when asked what a 2-0 seedling (two years in the seed bed and not yet transplanted) was when he replied that it had been sown for two years but had not yet appeared above ground? In the case of some plants with delayed germination, perhaps he thought he had the real answer though he didn't elaborate. Then there was the young hopeful, an aspiring wildlife manager no doubt, who was certain that "forest increment" (growth) was "droppings found on the forest floor." Perhaps the student who claimed that "citrus spruce" was one of the more important West Coast species had become infused with the advertising of the Sunkist school and confused with the Indian derivative, Sitka. And forest nursery managers would probably like to avoid as an apprentice the young man who, explaining the problem of the many fungi causing "damping off" (dying) of seedlings in the beds, simplified the whole af-

fair by stating that it is merely the "reduction of moisture."

The old reliable phenomenon of the alternating hosts of the white pine blister rust, namely the white pine and currant or more correctly, ribes, prompted some students to concoct the fantastic in explanations. One was certain that the white pine blister rust operated "on the principle of the alternating currant," while the other—believe it or not—opined that it was a question of "rabies and rab-bis" (of all things) who were responsible for the scourge! Many young men, too, even though they may have adolcesced in the New Deal era will have to change their ideas. Mice can be controlled much more practically and efficiently than "introducing cats onto an area." Likewise, the freshman who believed that "The cotton boll weevil attacks the bole of the cottonwood" has, I hope, changed his ideas for the better.

You sometimes wonder how, in spite of your best to guide these struggling scholars, they get some of the ideas they set down on paper. I'm positive, for example, that I never stated that "all national forests are in the middle of the woods." And I am certain, after describing the naval stores industry, albeit briefly but nonetheless fully, no one could have gained the impression that "naval stores are chain stores in the South selling paints and varnishes."

Possibly inspired by something he had seen, or read (in the wrong place), one freshman believed timber cruising was "walking through a tract of timber plotting species and how much on a map." An answer as vague as this hardly merits sympathy but what, I ask you, are you going to do when someone states that "grazing can be controlled by illumination of the stock" when he meant elimination?

There are certain ABC's of forestry, a board foot, D.B.H. and so on that you explain early because you use them in many forestry subjects nearly every time you talk. Everyone who learns them never forgets them—that is, nearly everyone. There is always, it seems, some roving non-conformist who enjoys his insularity. It must have been this kind of fellow who, when asked what the abbreviated form of "Diameter Breast High" stood for, straightaway wrote "District Bearing Hardwoods."



"Speedy" Heiman
Measuring five feet eight inches in diameter at the butt, this black gum log—the largest ever received at the Louisiana Mill at Hammond, Louisiana—and its slightly smaller brother yielded 2,933 board feet of material. It was cut near Doyle in Livingston Parish. Applying the tape is Mill Superintendent Aulton Bickford and District Forester E. J. Mead of the Louisiana Forestry Commission.

Water Policy

Because of the recent upsurge in the planning and construction of water control structures, the U. S. Department of the Interior has issued a policy statement designed to safeguard the interests of the national parks and monuments.

The policy, as drawn up by the Commissioner of Reclamation, with the concurrence of the director of the National Park Service, and the approval of the Acting Secretary of the Interior, provides that no water control project or investigation or survey for such project affecting the area as a national park or monument, may be reported on or undertaken without prior approval by the commissioner after he has conferred with the director of the Park Service.

Through the working of this policy the department hopes to be able to permit the highest beneficial use of the park and monument areas concerned in water developments and to retain the national heritage of scenic, scientific and historical resources.

Wildlife Conference

The Twelfth North American Wildlife Conference will be held in San Antonio, Texas, February 3, 4 and 5, according to Dr. Ira N. Gabrielson, president of the Wildlife Management Institute. This marks the first time that the annual conference has been called in the Southwest, and an unusually large attendance is expected from the western states. The conference last year was held in New York.

There is special need for the coming conference, Dr. Gabrielson pointed out, to coordinate the efforts of all agencies and groups in the replenishment of the renewable resources diminished by years of war. The state and federal conservation officials depend upon this annual conference, sponsored by the Wildlife Management Institute, to observe trends throughout the country.

Fire Danger Stations

Forest fire danger measurement stations are being established in 50 localities in South Carolina by the State Commission of Forestry.

These stations will be used to measure wind velocity, rain fall and fuel moisture content, to determine, in advance, periods of high fire danger. Stations are being located on the basis of one to each 300 thousand acres of coastal plans and sand hills area and one to each 150 thousand acres of Piedmont area.

GARDEN GUIDE

Here is a list of some of the things to be found in the new 1947 Short Guide of Kelsey Nursery Service. Copy free on request (except 25c west of Iowa). Will be ready in late February—but write NOW!

AZALEAS

70 Choice Varieties—mostly in small inexpensive sizes. Both evergreen and deciduous.

Gable's Hybrid Azaleas—a new race of real hardy kinds. Sensational colors never before in really hardy plants. 5 assorted 8 to 12 in. **\$8.50.**

BLUEBERRIES

10 New Giant Blueberries—strong 4-year-olds (bearing age) now 1½ feet high, assorted named varieties, our selection but all good, **\$22.50.**

EVERGREENS

Kelsey Berrybush Yew—dark green evergreen rather dwarf, bushy. Covered with brilliant red berries in autumn. 15 inch B. & B. plant for **\$4.50.**

Japanese Yew—upright "Capitata" form. By the hundred and by the thousand. Smallest size as low as 45c each in quantities.

Dwarf Evergreens—mostly grafted, rare and interesting shapes. Will never grow out of place in foundation plantings.

FLOWERING TREES

Franklinia, the only tree that blooms in fall. Sizes from **\$2.00** and up. Also Japanese Flowering Cherries, Chinese Crabs, Magnolias, Tree Lilac, Tree Azalea, etc.

Rare Dogwood Varieties—not just the white-flowering, but pink as well. Also Double-flowering (like white roses); also a form with yellow berries that the birds leave on a little longer than ordinary red berries.

FLOWERING VINES

A Wisteria that Really Blooms!—New Wisteria praecox blooms at half the age of other named sorts. Long blue clusters, vigorous grower. Also named Japanese forms, Chinese, etc. Better sorts of Clematis, Climbing Roses, Begonias, etc.

FRUIT TREES

Dwarf Fruits—All varieties, from **\$2.60** up. They can be pruned, sprayed or picked without ladders. Groups should be selected for proper pollenization, and we offer a suggested minimum selection of six: 2 Apples (Wealthy and McIntosh), 2 Pears (Clapp Favorite and Bartlett), 1 Plum (German prune), 1 Peach (Elberta). All 6 are 2-year size, fruit possible next fall, for **\$23.00.**

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Protect your banks from erosion with Vinca minor (heavy clumps **\$12.00** per 100). Pachysandra under trees where grass will not grow—**\$9.00** per 100. Many others to choose from.

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Kneipp Retires From USFS: Succeeded by Hopkins

Leon F. Kneipp, for the past quarter century in charge of land acquisition and planning for the U. S. Forest Service, and the oldest active Forest Service officer both in age and length of service, will retire December 31. He will have served continuously for nearly 47 years.

Howard Hopkins, until recently chief of the Service's division of private forestry, will succeed Mr. Kneipp.

Born in Chicago in 1880, Mr. Kneipp played a leading role in developing and expanding the federal forest purchase program under which more than 18 million acres have been bought for national forest purposes and nearly five million acquired through exchanges and donations.

The Forest Service had not yet been established when Mr. Kneipp was appointed a forest ranger in 1900, and assigned to the Prescott Forest Reserve in Arizona. The forest reserves were then in the Department of the Interior. When they became national forests under the jurisdiction of the Department of Agriculture in 1905, Mr. Kneipp was ranger in charge on the Pecos River Forest Reserve in New Mexico. He was assigned to Washington in 1907 as a forest inspector. Made an assistant chief of the forest service in

1908, he served for a time in the branch of grazing, and became chief of the branch in 1910. In 1915, he was named district forester in charge of forest service operations at Ogden, Utah. Five years later, he returned to Washington as an assistant chief in charge of land acquisition and planning.

Mr. Kneipp is a widely recognized authority on outdoor recreation. He pioneered in the movement for preservation of wilderness tracts and in the development of the forest service program for maintenance of designated wilderness areas. He is the author of numerous writings in his field, including sections in the Cope-land and Western Range reports.

His successor, Mr. Hopkins, comes to his new post after 23 years of service in various forest service regions, branches, and activities, including six months in the division of land planning in 1933. During the war he directed the Timber Production War Project. At various times he served as associate regional forester at San Francisco, assistant director of the New England Timber Salvage Administration, and assistant regional forester for the northeastern states. He became chief of the division of private forestry at Washington in 1941.

Gypsy Moth Eradication Predicted

Ninety percent reduction in the per acre cost to the American public for controlling the gypsy moth has been brought about by use of DDT and the airplane, according to R. A. Sheals, in charge of the Gypsy Moth Control program of the U. S. Department of Agriculture.

The gypsy moth has ruined great tracts of the nation's finest forests in New England.

Mr. Sheals reports that only four years ago gypsy moth control cost the public from \$15 to \$20 an acre. Airplane spraying with DDT costs slightly less than \$1.50 an acre. One airplane can treat as much as 1,000 acres of forest in a single day.

Even more important, says Mr. Sheals, DDT sprayed from aircraft appears to give complete control of the gypsy moth in one season. The Bureau of Entomology and Plant Quarantine last summer used airplanes for spraying slightly less than 100 square miles of forest lands infested with gypsy moth in Pennsylvania and New York. Final checks have not yet been completed. But

sufficient checking has been done to indicate complete control has been obtained, except in three small areas in one narrow mountainous locality, he states.

Thousands of acres of fine timber have been destroyed by the gypsy moth in New England during past years. It is known to infest forests of Massachusetts, Rhode Island, Connecticut, southwestern Maine, much of New Hampshire and Vermont, a narrow strip along eastern New York, and a small area in Pennsylvania.

All known infested Pennsylvania forests were treated with DDT last summer.

The eradication of the gypsy moth from the United States by use of the newly developed weapons no longer seems impossible. DDT and airplanes, together with recently developed high-speed blower-type ground machines, may mean that this European insect-threat to the nation's forests may be on the way to extinction in this country. It has been a major insect pest in the New England forests for nearly 70 years.

Oak Conservation

A resolution recommending that its member companies refrain from cutting standing oak timber or purchasing either logs or bolts produced from oak timber measuring less than 16 inches in outside diameter at a height of 12 inches above the ground, was adopted by the Associated Coopers Industries of America, Inc., meeting in Memphis, Tennessee, in November.

The resolution called attention to a shortage in the volume of standing timber suitable for the manufacture of cooperage and to the industry's experience that it is uneconomical to use white oak less than 16 inches in diameter for tight cooperage. In addition, the resolution urged the cooperation of the entire industry with timber owners and state and federal agencies in selective cutting, fire protection and reforestation of lands suitable for timber growing.

Pennsylvania Program

The State Planning Board of the Pennsylvania Department of Commerce has proposed a 10-point outline for a forest program for rehabilitating the forests of the state. Pointing out that Pennsylvania led the nation in the output of sawtimber in 1860, the board's report shows that it had dropped to twenty-third in national lumber production by 1939, less than one-twelfth its greatest productive year.

The program for Pennsylvania calls for (1) a continuous and intensified program of research as to the utilization of forest products and the reduction of waste in lumbering and sawmill operations; (2) an increase in the number of farm foresters; (3) the organization of local forest-marketing pools; (4) intensive instruction and publicity as to sound forest practices; (5) the establishment of annual educational camps for farm boys and, if feasible, for adult farm and woodland owners; (6) increase in the production of the state's tree nurseries; (7) passage of legislation, if necessary, enabling negotiation of agreements for the planting or replanting of cutover or other waste land by state-paid labor—all costs to be satisfied by a lien on the future timber crop; (8) continued enforcement of compulsory planting and stabilization of strippings in coal mine operations; (9) increased publicity in urban and rural areas as to the dangers and cost of forest fires; and (10) extension of county and community forests.



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THE HANDBOOK OF GAME AND FISH MANAGEMENT. by Walter A. Gresh. Published by Walter A. Gresh, Box 121, Traffic Station, Minneapolis 3, Minn. 80 pages, illus. Price \$4.00.

A handy compendium of game management statistics and other information, this handbook is in effect a pocket file, complete with index tabs. Major breakdowns include: fiscal, licenses and permits, administration, maps, fish, lands, waterfowl, and miscellaneous classifications. The book, pocket-size, brings together the type of information that the game manager should have always at his fingertips.

ESTABLISHING AND OPERATING A SMALL SAWMILL BUSINESS, by Joseph L. Muller. Published by the U. S. Department of Commerce. 154 pages, illus. Price 35 cents.

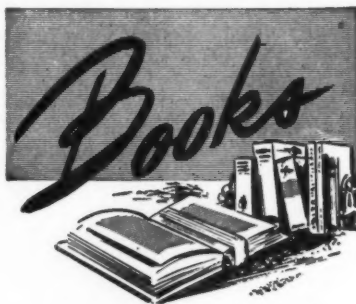
Initially prepared by the Bureau of Foreign and Domestic Commerce at the request of the War Department for use of the armed forces, this bulletin (Industrial Series No. 20) answers the need for sound and practical information for newcomers in the manufacture of lumber. Further, it is a very useful guide for all small sawmill operators, new or old, interested in increasing the efficiency of their plants.

FORESTRY FUTURES AND CONSERVATION MISCONCEPTS, by Mary Roddis Connor. Published by the Wakefield Press, Wakefield, Michigan. 34 pages. Price \$1.00.

In leading up to a summarization which outlines a 13-point program for forestry in the Lake States, Mrs. Connor develops a program which is also of national application. Her story is based mainly on the economic importance of forests and forestry—"the wealth of the forest must be maintained and used." A provocative booklet, it should be read by foresters, lumbermen, wood consumers and others interested in conservation, and especially by those who are interested in doing something concrete to integrate the practice of forestry with the problem of serving the country's needs for wood and wood products.

A TIPPY CANOE AND CANADA TOO—An Adventure in Animal Antics and Wilderness Wisdom, by Sam Campbell. Published by Bobbs-Merrill Company, Indianapolis, Indiana. 250 pages, illus. Price \$2.00.

Just released from the press is another of Sam Campbell's fascinating stories of his animal friends. New characters—human and animal—



are introduced, and a number of fine old friends come trooping through the scenes, such as the porcupines—Inky, Salt and Pepper; Sausage, the ground hog; and the five red squirrels—Eeny, Meeny, Miney, Mo, and Still-Mo.

Adventure—search for a fancied Sanctuary Lake—lures the Campbells beyond their Wisconsin Sanctuary into the canoe country of Canada. Readers—young, old, or middle-aged—will quicken to the experiences of the Campbells as related here, and the antics of the forest creatures they encounter offer an escape from the confusion and quandaries of these high tension days of adjustment.

PRACTICE OF SILVICULTURE, by Ralph C. Hawley. Published by John Wiley and Sons, Inc., New York. 371 pages, illus. Price \$4.00.

In the eight years which have passed since the fourth edition of *Practice of Silviculture* was published, much progress has been made toward a better understanding of the principles of silviculture as they apply to the forests of North America. In this fifth edition, the book has been thoroughly revised and many portions have been rewritten and enlarged to give expression to new knowledge and modern interpretations of old principles.

NEW CROPS FOR THE NEW WORLD, edited by Charles Morrow Wilson. Published by The Macmillan Company, New York. 295 pages, illus. Price \$3.50.

In 16 chapters, each written by an authority in his field, this book gives the reader a look into the present and future of the American tropics. It is the story of rubber plantations in the South American forests, of the essential oils in Brazil and Honduras, South American silks, bamboos, tropical fruits and livestock breeds, foods, drugs and medicinal crops. All of these can be grown, and many are now growing successfully, in the Western Hemisphere.

The publications listed below must be ordered direct from the addresses as given and not through the Association.

Trees for Reforestation in Indiana, by Daniel DenUyl. Cir. 306, Agric. Expt. Sta., Purdue University, Lafayette, Indiana.

Walnut Production in California, by L. D. Batchelor, O. L. Braucher and E. F. Serr. Circ. 364, Agric. Expt. Sta., College of Agriculture, University of California, Berkeley, California.

The Story of Conservation in New York. Cornell Rural School Leaflet No. 4. N. Y. State College of Agriculture, Cornell Univ., Ithaca, N. Y.

Wildlife Review. Abstract No. 45—Fish and Wildlife Serv., U. S. Dept. of the Interior, Chicago, Ill.

The Whitefish Fishery of Lakes Huron and Michigan with Special Reference to the Deep-Trap-Net Fishery, by John Van Oosten, Ralph Hile and Frank Jobes. Fishery Bull. No. 40. Fish and Wildlife Serv., U. S. Dept. of the Int. Supt. of Docs., Wash., D. C. Price 35 cents.

Proceedings 1945 Annual Meetings: Twenty-first National Shade Tree Conference; Twelfth Western Shade Tree Conference, and Sixth Southern Shade Tree Conference. Paul E. Tilford, editor. The Collier Printing Co., Wooster, Ohio.

Recreational Resources of the Alaska Highway and Other Roads in Alaska. National Park Service, Newton B. Drury, Director. U. S. Dept. of the Int. Supt. of Docs., Wash., D. C. Price 50 Cents.

Pulp and Paper Industries in Canada and Newfoundland—A Map. Order from The Dominion Forester, Dept. of Mines and Resources, Ottawa, Canada. Price 25 cents.

The Shrubs and Woody Vines of North Carolina. Bull. 46 of the Department of Conservation and Development, Division of State Parks, Raleigh, N. C. Price 10 cents.

The Rural South—A Reading Guide for Community Leaders. Edited by H. C. Brearly and Marion Tippet. Issued by The Southern Rural Life Council, Geo. Peabody College for Teachers, Nashville 4, Tenn.

Judging Mountain Meadow Range Condition in Eastern Oregon and Eastern Washington, by Elbert H. Reid and G. D. Pickford. For. Serv., Circ. No. 748, U. S. Dept. of Agr. Supt. of Docs., Wash., D. C. Price 10 cents.

Rubber Spray

A new weapon for use in the battle against fungi and insects has been announced by the B. F. Goodrich Chemical Company. It is a milk-like agricultural chemical, derived from petroleum and sulfur and having a rubber-like base that allows its protective film to "grow" with the plant and resist rain and dew, holds other pest repelling chemicals "on the job" longer and more effectively, and makes it effective for spraying or painting tree wounds and for rot-proofing. When diluted with water it can be used with standard spraying equipment.

The base material of the new chemical is polythylene polysulfide, derived from petroleum and sulfur. As it dries on leaves and fruit, the substance forms a microscopic elastic web that stretches to accommodate growth.

It is physically compatible with such fungicides as Bordeaux and limestone-sulfur, and with such insecticides as lead arsenate, lime, fixed nicotine sulfate, DDT or combinations of these.

State Park

(From page 19)

be made, but the State Park Commission would see to that. The museum must be planned and furnished, with perhaps a room for Stevenson, a room for Napa County history, a room for mining, a room for Russia in California, but that would be sheer fun. We were over the hump!

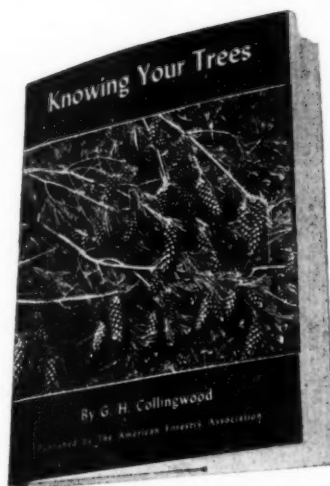
As Harriet and I sat in front of a wood fire at my house the evening of the re-dedication on Mount Saint Helena, we reviewed the campaign from its halting start to its hour of triumph.

"The best thing of all is the friendships we've formed," I said. "The various members of the committee offering help, the group working as one."

"There's a lovely quality about it all," Harriet nodded. "I mean, it's been the Stevenson admirers who've done the work, for the sake of Stevenson's courageous philosophy as well as his books."

Don't forget, when you are impelled to go after other historic spots that should be saved, that there is idealism in us all. It takes but a jolt sometimes to set it off. At the start you may be laughed at for a crank. But presently, if your cause is sound, people will follow your lead. With courage and faith and a lot of hard work, you too can make your dreams come true.

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Pine Plantation

(From page 29)

at four percent \$76.72. Since the stumpage value is \$65, it is obvious that the stand has earned about three and one-half percent interest, a good rate of return for any pulp and paper company to make on its woods operations. At three percent interest, the production cost of the pulpwood, after deducting for the value of the lagging, is \$1.81 a cord.

An even better showing would be made by the pines if the "company" were to take advantage of the local market for cabin logs, selling all well-formed trees for this purpose, and cutting the rest of the merchantable material into pulpwood and lagging.

Because of the great recreational possibilities of the Ely area, such cabin logs are in great demand, their stumpage bringing \$3 a standard cord. These logs, which are split by a saw and used vertically, are eight feet long with a minimum top diameter of six inches. Not all trees, of course, will be straight enough for such use. Therefore, deducting one-fourth of the volume of the larger bolts for poor form will leave better than six cords of cabin logs, worth \$19.20. Add to this the remaining 22½ cords of pulpwood and seven cords of lagging, and you have a net return of \$71.40, or about three and three-fourths percent compound interest on all costs.

From the figures presented, it is clear that this 30-year-old planta-

tion has already paid its way. It affords an eloquent rebuttal to those who maintain that planting is such a costly undertaking that no one but government agencies, which do not have to answer to stockholders, can afford to do it.

It is shown that managing on a short rotation primarily for pulpwood is profitable. However, greater benefits can be obtained by managing for high quality sawlogs and other products, such as mine timbers, poles and piling. Only the finest trees, however, should be allowed to remain to the end of the sawlog rotation, estimated at 140 years. The less valuable ones will be gradually cut out either in regular thinnings, beginning at 35 years, for pulpwood, lagging and small poles, or later in intermediate cuttings for piling and poles, with pulpwood as a by-product.

Considering the great aesthetic appeal of these beautiful plantations as well as their rapidly increasing value in dollars and cents, it is not surprising that Heritage never comes near Ely without visiting his pines. Lying as they do surrounded by a poor stand of aspen of little value on the area that was not planted, they are a living monument that any forester would be proud to leave. Not many of us can plant a sizable tract of land and be fortunate enough to watch it develop into a splendid young forest. The few who do are in a class by themselves — thoroughly envied by the rest of their fellows.

Wood Products Research

(From page 21)

for exterior use can be made at no greater cost than conventional plywood. The process developed for making this plywood is basically different from all other methods.

Flexible wallboards—The aim here was to make a low-cost wallboard which could be supplied to the job in the form of a roll so that an entire wall could be covered in one piece without joints. This product is now entering the semi-commercial stage of development. It will cost less than lath and plaster and will eliminate the moisture introduced in construction by plaster and the delay caused by plaster drying.

Flooring for industrial buildings—The problem was to produce a utility floor for factory use which could be made of low-grade material obtained from sawmills, and which would cost

substantially less than conventional end-grain blocks and be equally durable. This is not a simple problem and a great deal of work has been done on it in recent years to reduce the ability of the wood to expand while in use. Through research work recently completed the expansion of the wood has been cut in half. Cost estimates indicate that the new industrial floor can be made for less than any end-grain floor on the market today.

Fireproof fiberboard—The aim here was to make a low-density fireproof board which has value as an insulation board, and which will absorb sound, and to develop a continuous process for its manufacture. After several years, the product has now been perfected, using cordwood as the basic raw material. A machine

for producing the board in commercial size in a semi-continuous operation has been built and is under test in the laboratory.

Synthetic hardboard—The problem was to make a hardboard one-half inch or more thick in one pressing entirely of wood waste, which could be nailed and sawed, and which used no binder of any kind in its manufacture. This product has been perfected in the laboratory and is now ready for the pilot stage of manufacture.

Converting sawmill slabs into fibers—In the production of various new wood products long strands of wood are required. Considerable work has been done in the laboratory in the development of machinery for converting low-grade logs and sawmill waste into wood wool at lower cost than that of making fine excelsior.

Continuous wood—The problem is two-fold: (a) to make a continuous veneer sheet from which all defects have been removed and which can be wound up on a reel; and (b) to make a continuous board which is straight and can be cut to any desired length. The former problem has been solved, but further research work is required to bring the latter process to the commercial stage.

Prefabricated roof slab—The hollow, stressed-skin plywood roof slab required some type of overall roof covering to make it weatherproof. A slab has now been developed in the laboratory for which the overall covering has been eliminated, and which requires no further trade on the job than a carpenter, and no further tool than a hammer. This slab can be used for flat roofs. It is weatherproof and will not leak at the joints. It fulfills the functions of roof covering, sheathing, insulation, rafters and ceiling all in one unit, and costs considerable less than conventional construction.

One-piece wood box—The problem here was to make a basically wood box but one which could be shipped flat like a corrugated fiber container. Such a box has been developed. A typical box of this kind made of three-sixteenths-inch veneer will support a load of over 200 pounds when tested diagonally and empty. It uses no nails or cleats in its construction.

Hollow door—Because of the great increase in cost of veneers suitable for the facing of flush doors, a door is now being developed which uses composite materials. In order to be satisfactory, such a door must not only cost less than all conventional flush doors but it should have a harder surface, remain perfectly flat

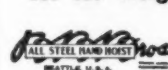
in service and show no evidence on the face of any kind of grid within. Research work now substantially completed shows that this assignment is not outside the realm of early solution.

Sliding door—Architects have long sought a satisfactory sliding door to save floor space in apartment buildings. The laboratory has succeeded in overcoming most of the defects inherent in currently-manufactured sliding doors.

Molded plywood—The art of molding plywood in compound curvature was considerably advanced during the war in connection with the manufacture of plywood aircraft. Some of this work has been done in the Elmen-dorf Laboratory. Where heavy compound curvatures are required, however, the use of plywood holds little promise as a material of construction in competition with metal, commensurate with the costs involved.

Experience in the development of various wood products has shown that a new material of commerce is not created out of a sudden inspiration, but that a long series of steps is involved between an idea and a profitable business, and that the cost of development is more or less proportional to the size of the business created. Most new products go through a process of evolution: (a) Conception based upon knowledge of certain difficulties; (b) application of the principles of science in the development of a theory aimed at the solution of the difficulties; and (c) experimental work and laboratory

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testing to determine the validity of the theory and to observe phenomena that may have bearing on the problem.

Then, assuming that research in the laboratory has brought success, patent applications are filed to protect any discoveries made; machinery or special equipment for manufacture is developed for producing the new product in a pilot operation so that

it can be manufactured on a semi-commercial scale for sale to the public and for testing in use at minimum expense; and upon the experience gained in the pilot operation, the equipment for full-scale commercial manufacture is designed and built. Finally, the merchandising of the material on a semi-commercial scale yields the data for sound merchandising on a larger scale.

Virginia Forests

(From page 26)

cultural research intelligently applied are the ways to overcome this problem.

Piedmont—A failing agricultural area of small ownerships, abandoned farms, and eroded soils, this is the poorest section of the state. Although covering 61 percent of the area, woodlands contribute only 10 percent of the income. Forests are growing faster than they are being cut, but they are in poor condition. An excessive drain on the trees of sawlog size is reducing trees to small sizes and deteriorating the species.

Mountains—Large ownerships are all-important. The slow-growing hardwood forest of small trees, much of it inaccessible, does not warrant intensive management. It is valuable for watershed and scenery, and can supply special products such as veneer logs and mine props. Above all, it needs protection from fire.

Notwithstanding the fact that the past has produced many horrible examples of inadequate fire protection and destructive cutting, Virginia's annual yield of wood for industry is a promising indication of the state's ability to produce forests. It is estimated that in 1943, one and one-half

billion board feet of sawtimber and nearly six million cords of pulpwood were removed for use. Five percent as much sawtimber and 10 percent as much cordwood fell victim to insects, disease and fire. However, during the same year estimated volumes of 1,676,000,000 board feet of sawtimber and 8,000,000 cords of wood were added by growth. Thus despite mediocre forest management the state's sawtimber and cordwood growth and drain equations are currently in balance. With good management there can be a great yearly increase in the annual yield.

(EDITOR'S NOTE: This article is based on the findings of the Forest Resource Appraisal of The American Forestry Association. South Dakota will be presented in the February issue, Connecticut in March. Findings in Arkansas, California, Colorado, Delaware, Illinois, Indiana, Iowa, Louisiana, Maryland, Massachusetts, Michigan, Nevada, New Jersey, North Carolina, Ohio, Oregon, Rhode Island, Texas, Vermont and Wyoming have already been published. This series of state stories will be published in book form later in the year.)

Skeeter-Beater

(From page 11)

plant and animal life in the water or the bacteria in the soil.

During the war years, research was carried on at Orlando in the development of aerial spraying apparatus for the various kinds of Army aircraft.

The maneuverability of helicopters was found to be a great asset where extremely accurate aerial spraying must be done. This includes the spraying of many small, isolated patches of swamps and ponds, and winding water courses and shore lines. For such use, a motor driven pressure pump for the spray was developed. An especially valuable dem-

onstration of the possibilities of helicopter spraying was carried on near DeLand, Florida. Here the helicopter landed on a main state highway and refilled from truck-borne supply tanks, thus saving a round trip of 40 miles to the nearest airfield each time the DDT tank went dry.

The large loads of both fuel and spray that can be carried by transport and bombardment type aircraft make these ideal for the spraying of large areas or of regions at great distances from landing or replenishment areas. A measure of the potentialities of these airplanes is their ability to treat approximately six square miles with

DDT spray from a single filling of their tanks.

An extremely simple, yet highly effective, spraying apparatus has been designed and tested for the large planes. No pressure is used. The spray flows by gravity from the tank through a pipe of carefully calibrated diameter which determines the dosage discharged. This pipe is surrounded by a streamlined fairing and sticks far enough below the airplane to be clear of its slipstream. The speed of these airplanes is so great that the mere sweep of air past the 45 degree angle cut at the end of the pipe whips the spray liquid into fine droplets.

On one test area concentrations of salt-marsh mosquitoes were found to be as heavy as recorded anywhere in the world. Tests revealed that the DDT spray will eliminate 98 percent or more of the adult mosquitoes within one to two hours.

Despite its success in the Orlando station area, the Air Proving Ground Command does not recommend aerial spraying as a cure-all for all insect control. The official attitude is that

aerial spraying is to be used only when more conventional methods of spraying from the ground, of ditching, filling and draining, have been tried and found to be inadequate.

Aerial spraying is, however, the most practical means of controlling mosquitoes over very large or inaccessible areas. It can be used as a means of applying DDT for the control of mosquito larvae, although in nearly all cases ground control methods are more efficient for this.

With the malaria mosquito the effectiveness of the DDT is figured this way: A single spraying will eliminate 98 percent of the mosquitoes infected with malaria. Even if other *Anopheles* adults develop within a week's time and promptly bite infected human beings, thus becoming infected themselves, a period of 10 days to two weeks will elapse before these mosquitoes mature the malaria parasites in their bodies and become able to infect other humans. It is thus evident that a single adequate aerial spraying can give a very high percentage of protection from malaria for a period up to three weeks.

Sugarwater Forests

(From page 10)

bags, will always be prized. Koa, the most noted of the Hawaiian hardwoods, is getting scarcer, though efforts are being made to save it for its sentimental as well as for its intrinsic value. Milo and kolea are also to be found still, though not in abundance.

In 1918, only one-fifth of the island of Oahu was in forest reserves—so called. Today, due in large measure to the efforts of the planters association, one-third of the island is actually well covered with woods. The tremendous interest of the sugar planters in the problems of reforestation may seem strange until it is realized how vast are the quantities of water used in irrigating their cane crop.

To grow an acre of sugar cane requires during the approximately 18-month period of growth enough water to cover it to a depth of 17 feet. One sugar plantation pumps all its irrigation water from the artesian basins. Daily, three times enough water is pumped as would be needed to supply the city of San Francisco, one and one-half times what Boston uses.

Fortunately, the rainfall in many parts of the Hawaiian Islands is ex-

tremely heavy. On the windward side of Mount Waialeale it runs as high as 530 inches a year. Compare this with the 42-inch average for New York. More and more of this precious water is being funneled into the artesian basins, but during the war the strain on the resources of the wells, particularly those of Oahu that supply the city of Honolulu, was a matter of considerable concern to the scientists in charge. The rapid increase in population and the demands of mushrooming war industries taxed the wells to such an extent that some of them dropped to levels so low that sea water began to seep in—a development that spells death to the well's usefulness.

Now that the war is over the demand remains heavy, heavier perhaps than it was expected to become before the year 1965, according to conservative estimates of normal population growth. This means that the foresters of the islands will have to speed up their program.

One method which will probably be employed to effect more rapid reforestation has already proved its value in Hawaii. Beginning as early as 1926, airplanes were used to broadcast seeds over immense areas, and to drop them on many places that

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were otherwise inaccessible save to wild sheep and goats. Several flights were made over a large burned area on Hawaii, and now the trees are seeding themselves in that same area.

Not merely will the quantities of the trees be increased in the next few years, but their quality as water-forest plants will receive particular attention, since it has been found that it is not sufficient that a plant should be structurally a good water detainer. Certain species, such as the eucalyptus, absorb more water from the soil

and breathe more moisture into the air (thus wasting it, as far as the water supply is concerned) than do other kinds. Therefore, the eucalyptus will not play as great a part in future reforestation projects as it did in earlier ones.

In the next few years we may expect to see the reforestation of Hawaii advanced by every possible scientific device and development, for the sugar planters of the islands are now fully aware that water is the gold in their hills.

New Day in the Tall Timber

(From page 14)

Paul swing up his gun. The buck's telescopic eyes caught the movement through the trees. He whirled. I heard the crack of the gun, saw its impact against Paul's shoulder. The animal took off, looking like anything but a dead or wounded buck.

Paul muttered under his breath and I stumbled to my feet. I found where the hollow point bullet had splintered a twig in the course of its flight, had shattered into a hundred pieces and marked trees like the pellets out of a shotgun.

"Wasn't that a magnificent picture," Paul said, and his eyes shone with the same light I had seen over the campfire before dawn.

"Yeah," I replied, a little sharply, "but you missed."

Paul was half smiling to himself.

"If I had killed him," he said, "my fun would be over. Maybe I'll see him again this afternoon, or in the morning."

"If he stops in the county," I retorted.

As we walked back down the trail into the cove, I regretted my words. I had witnessed the type of sportsmanship every man should own as a part of his hunting equipment. Paul had gloried in the fun of the chase and not in the kill. He would get his buck before the hunt was up. They were that plentiful on the management area. But long after his venison was gone, he would remember that picture there in the cold morning woods when the big buck threw up his head, snorted and leapt for the protection of the mountain rim. I had stood on the sidelines and watched a hunter grow to full maturity of good sportsmanship.

I knew, too, what Teddy Roosevelt had in mind when he took up his pen and signed the document which set aside many thousands of acres of national forests for the greatest good of all the people.

AUTHORS

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How to Avoid Saving Money

by DANNY KAYE



To avoid saving money, the first thing is to cut off all your pockets. (Or throw away your purse and keep your lipstick in your snood.) Thus you will have to carry your money in your hand. Which will insure that you—1. spend it, 2. lose it, 3. get it taken from you—quicker!



Also to be avoided like crazy are piggy banks and sugar bowls. Keep these out of your home! The kiddies in particular are victimized by such devices, often saving quite a bale of moolah. Be stern even if the little ones cry—remember what money could do for them! And be sure to avoid budgets. It is best to draw your pay and walk down Main Street buying anything you don't particularly hate.

Above all, don't buy any U. S. Savings Bonds—or it's impossible not to save money! These gilt-edged documents pay fat interest—4 dollars for 3 after only 10 years! There is even an insidiously easy scheme called the Payroll Savings Plan by which you buy bonds automatically. Before you catch on, you have closets full of bonds. You may even find yourself embarrassed by a regular income! Get-gat-gittle!



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Danny Kaye

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